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MEDICINAL & AROMATIC PLANTS ABSTRACTS

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SCIENTIFIC & RESEARCH
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Agronomy

9203-1396 Agarwal, S., Choudhary, G.R. , Sharma, R.K.(All India Coordinated Spices Improvement Project, Department of Genetics and Plant Breeding, SKN College of Agriculture, (RAU) Jobner 303329, Jaipur, Rajasthan, India) **Different aspects for improving the yield of essential oil in coriander (Coriandrum sativum).** *International Symposium on Newer Trends in Essen.Oil & Flavs, RRL Jammu, J&K, India. p.79*, Oct 21-23, 1991 (Eng).

The quality parameter in seed spices comprises aroma or the flavour. Seeds of different entries of coriander were evaluated for grain yield and essential oil contents. The essential oil content varied from 0.2 to 0.4 percent. The highest yield of grain and essential oil was observed in RCr-41 and local check. Extraction method and stage of harvesting were standardised to achieve maximum yield of essential oil. Grinding by blender from 1/2 to 3 min. gave higher yield of essential oil as compared to manual grinding using pestle and mortar. The yield of grain and essential oil was maximum when seed was harvested at the stage of 50 percent grain turning yellow. (Abstr. No. CT-O2).

9203-1397 Avtar Singh, Mahey, R.K.(Department of Agronomy, Punjab Agricultural University, Ludhiana 141001, Punjab,India) **Characters association studies in dill (Anethum graveolens L.).** *Indian Perfumer*, v. 35(3): p. 181-185, 1991 (5 ref, Eng).

Field studies were carried out to find the association amongst various parameters for two consecutive years. The correlation values showed that plant height, branches/umbels perplant, straw and seed yield had positive effect on oil content in seed. However, oil content in seed was negatively correlated with NPK content in seed and plant indicating that the oil content in seed decreased with nitrogen application. Whereas NP content in seed and N content in plant significantly increased the oil content in fresh herb. Under phosphorus application, NK content in seed and NPK content in plant had positive effect on oil content in seed fresh herb. Whereas, P content had no effect on oil content in seed fresh herb due to the higher initial status of the P in the experimental field. The results also revealed that the seed yield was positively and significantly related to plant height, tertiary branches/umbels per plant and straw yield.

9203-1398 Badiyala, D.(Regional Research Sub Station, Sangla Distt. Kinnaur 172106, HP, India) **Fertilizer management in saffron under dry temperate conditions of Himachal Pradesh.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.58*, Oct 21-23, 1991 (Eng).

A field experiment consisting of all possible combinations of 3 levels each of nitrogen (0,45 and 90 kg/ha), phosphorus (0,30 and 60 kg P2O5/ha) and potassium (0,30 and 60 kg K2O/ha) alongwith 2 spray treatments of urea (2.5 percent) and multiplex was conducted at the experimental farm at Sangla, HP, during the summer seasons of 1987, 1988 and 1989. The treatments were laid out in randomized block design with three replications. The results of three years studies showed that, lenght of leaf needles/plant, number of leaf needles/plant, number of flowers/m2 and dry saffron yield were influenced significantly by different treatments under study. It was further noted that all these characters of saffron increased with increase in fertilizer levels (N90P60K60). Similarly, spray of urea @ 2.5 percent and multiplex recorded significantly more leaf length, leaf numbers, number of flowers and the saffron yield over control treatment. (Abstr. No. B-12).

9203-1399 Badola, K.C., Pal, M.*, Bhandari, H.C.S.(Minor Forest Produce Division, Forest Research Institute, New Forest, Dehra Dun, UP, India) **Rooting branch cuttings of Solanum hispidum for raising clonal crops.** *Indian Journal of Forestry*, v. 14(4): p. 290-291 , 1991 (6 ref, Eng).

Rooting trials of auxin-treated and untreated softwood branch cuttings of *S.hispidum* were conducted in the months of July and August. The cuttings were found to be moderately easy-to-root. Indole butyric acid (IBA) treatment increased percent rooting as well as root growth. The reatment stimulated sprouting of axlliary buds and the growth of shoots. IBA-treated cuttings showed 100 percent survival on their outplanting. The results show that IBA can be advantageously utilized as an aid for raising clonal crops of this species.

9203-1400 Bagchi, S.K., Veerendra, H.C.S.(Division of Genetics and Tree Propagation, Forest Research Institute, Dehra Dun, UP, India) **Variation and relationship in developmental growth phases of Santalum album after pruning.** *Indian Forester*, v. 117(12): p. 1053-1058, 1991 (2 ref, Eng).

After *S.album* pruning, the 'without host' treatment expressed lower mean, and variability whereas the 'with host' condition showed higher mean and variability. The elementary characters had lower variability and the composite characters had higher variability.

9203-1401 Balyan, S.S., Choudhary, D.K., Kaul, B.L.(Regional Research Laboratory, Jammu Tawi 180001, J&K, India) **Response of celery (Apium graveolens L.) strain "RRL-85-1" to time and method of sowing.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.67*, Oct 21-23, 1991 (Eng).

Two methods of planting viz., transplanting and direct seed sowing were studied at an interval of five days from 15th November to 30th December during the year 1988 and 1989. The results showed that seeds sown between 15th to 30th November produced higher seed yield than the crop transplanted with 50 days old seedlings. However, the seed yield was the same with both the methods of sowing . Delay in sowing beyond 30th November resulted in significant decrease in seed yield irrespective of any method of planting. However,this decrease in seed yield was more significant in case of direct seed sowing method (16 Q to 1.5 Q /ha from 15 November to 30th December) than the transplanting method where the reduction was 13 Q to 7.8 Q/ha during the same dates of sowing. Oil content of seeds did not show any improvement either with the methods of planting or dates of sowing. (Abstr. No. B-19).

9203-1402 Cernaj, P., Galambosi, B. , Helemikova, A., Martonsi, P. , Szebeni-Galambosi, Z.S.(Department of Experimental Botany and Genetics, PF. VPJS, Manesova 23, 04167 Kosice, CSFR, Hungary) **Effect of spacing and cultivation site on some biological and agricultural properties of Achillea collina Becker.** *Herba Hungarica*, v. 30(3): p. 15-26, 1991 (12 ref, Eng, Hin).

Edaphic and climatic conditions were found to influence the plant height, weight of plants, inflorescences, stems and leaves and drug production. The production of essential oil was also influenced but chamazulene content in the essential oil remained constant.

9203-1403 Chandra, S., Shahi, A.K., Ajit Singh(Regional Research Laboratory, Jammu Tawi 180001, J&K, India) **Harvest management practices on jamrosa grass (RRL-82).** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India, p.75*, Oct 21-23, 1991 (Eng).

An experiment was conducted to study the influence of various dates of harvest on Jamrosa grass (a hybrid strain of *Cymbopogon nardus* var. *confertiflorus* and *C.jwarancusa* during 1983 and 1984. The first harvest was taken at an interval of 5 days from 11th April to 5th May during blooming and thereafter at a regular interval of 45 days to obtain total six cuttings during the course of the year. Pool analysis studies suggest that the first harvest of the crop should be taken after 126 to 136 days from last date of harvest to obtain maximum essential oil yield (236.28 kg/ha) during the year. No marked differences were observed in the total geraniol content (80.3 to 81.6 percent) with respect to harvesting schedule. (Abstr. No. B-26).

9203-1404 Chandra, S., Dutt, P., Narasamma, B.L., Ajit Singh, Kaul, B.L.(Regional Research Laboratory, jammu-Tawi 180001, India) **Response of a new hybrid strain of lemongrass (CKP-25) to nitrogen.** *Indian Perfumer*, v. 35(3): p. 156-160, 1991 (5 ref, Eng).

A field experiment was conducted during 1987 and 1988, at the Field Research Station of Regional Research Laboratory, Jammu to assess the effect of four levels of nitrogen, (0,100,200 and 300 Kg N/ha) on a newly developed hybrid strain of lemongrass *Cymbopogon* (CKP-25). Three crop cuttings were taken during the year of establishment and highest level of N application (300 Kg N/ha) recorded significantly higher(79.5 t/ha) fresh herbage yield over control treatment, but did not differ significantly with N 100 and N 200. Similar was the trend in respect of essential oil yield during first year. During second year five crop cuttings were taken and an application of 300 Kg N/ha produced significantly higher herbage yield (103.9 t/ha) over lower doses of application. All the yield attributing and growth characters of lemongrass increased significantly with increase in nitrogen levels over control. Highest level of nitrogen (300 Kg N/ha) recorded maximum net profit which was Rs. 7,298.04 and Rs. 12,348.06 higher over 200 and 100 Kg N/ha respectively during 1987 & 1988.

9203-1405 Channakeshava, B.C., Gowda, M.K.M.(Dairy Science College, University of Agricultural Sciences, Hebbel, Bangalore 560 024, Karnataka, India) **Agrotechniques for sweet-flag cultivation.** *Indian Farming*, v. 41(9): p. 13-14, 1991 (Eng).

Types of soil, manuring, planting methods, irrigation and weeding, harvesting and curing methods required for the cultivation. *Acorus calamus* have been discussed.

9203-1406 Chuhan, H.S., Ram, P., Singh, U.V. , Singh, K.(Central Institute of Medicinal and Aromatic Plants, Regional Centre, Pantnagar, Nainital, UP, India) **Response of Japanese mint (Mentha arvensis L.) to phosphorus and zinc on mollisoles of Tarai belt in Uttar Pradesh.** *Indian Perfumer*, v. 35(3): p. 150-155, 1991 (5 ref, Eng).

Field experiments were conducted during 1986 and 1987 at Regional Centre, Pantnagar to study the effect of four rates of P (0,30,60 and 90kg ha-1) and Zn (0,10,20 and 30kg ZaS04 ha-1)on growth, essential oil yield and nutrient uptake of Japanese mint. Application of P at 60Kg ha-1 significantly increased the drymatter (28-31 percent) and essential oil (22-29 percent) yield over control. Whereas significant response of Zn was noted only upto 20Kg ha-1. Uptake of P and Zn by the crop at harvest were significantly increased by application of P and Zn and followed the dry matter yields. In general, interaction effects of lower level of one nutrient with the other at the higher level resulted in significant increase of growth and yield.

9203-1407 Dhar, A.K.(Regional Research Laboratory Branch, Sanat Nagar, Srinagar 190005, J&K, India) **Studies on saffron in Kashmir-IV. Variation in corm size and its effect on cormel production and flowering.** *Indian Perfumer*, v. 35(3): p. 173-176, 1991 (4 ref, Eng).

The extent of natural variation in corm-size and weight in *Crocus sativus* was assessed. Effect of mother corm weight on cormel production, leaf length, number of leaves per cluster and flowering was studied. Flower production was dependant on corm size and weight. The estimated linear regression was Y=36.49+8.60x.

9203-1408 Dhar, A.K., Bhan, M.K., Bhat, B.K. , Sharma, S.D., Chisti, A.M.(Regional Reseaech Laboratory, Sanat Nagar, Srinagar, JK, India) **Effect of cut on alkaloid concentration in leaves of belladonna.** *Herba Hungarica*, v. 30(3): p. 27-33, 1991 (10 ref, Eng).

Analysis of variance for alkaloid concentration in levels of *Atropa belladonna* revealed significance of genotypes and cutting treatments, for all the 3 and 4 cut treatments. Low alkaloid concentration during June and early July and higher amount in August, independent of cut number was observed. The cut X genotype interaction was found to influence the drug yield significantly.

9203-1409 Farooqi, A.A., Devaiah, K.A. , Narayana Gowda, J.V. (Division of Horticulture, University of Agricultural Sciences, Bangalore, Karnataka, India) **Influence of nutrients on growth yield and oil content of davana (Artemisia pallens Wall.).** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.47*, Oct 21-23, 1991 (Eng).

An experiment to determine the influence of nitrogen and phosphorus revealed that all the levels of nitrogen (0,80,160 and 240 kgs/ha) had significantly influenced the different vegetative and yield parameters. Of the different levels tried, nitrogen at 240 kg per ha recorded the maximum plant height (44.855 cm), number of branches per plant (22.317), plant spread (21.685 cm), number of flower heads per plant (589.717), fresh weight of herbage per plant (19.532 g), fresh weight of whole plant (36.543 g), computed fresh yield per hectare (16.33 t) and computed oil yield per hectare (18.048 kg). However, this treatment was found to be on par with the nitrogen applied at 160 kg/ha. Application on phosphorus alone failed to influence the growth, yield and oil content. However, the interaction effect of nitrogen (240 kg/ha) and phosphorus (80 kg/ha) resulted in significantly higher fresh weight of herbage (21.16 g), fresh weight of whole plant (40.39 g) and computed fresh herb yield (18.05 t) per hectare. (Abstr. No. B-03).

9203-1410 Gowda, T.N.V., Farooqi, A.A. , Subbaiah, T., Raju, B. (University of Agricultural Sciences, GKVK, Bangalore 560065, India) **Influence of plant density, nitrogen and phosphorus on growth, yield and essential oil content of chamomile (Matricaria chamomilla Linn.).** *Indian Perfumer*, v. 35(3): p. 168-172, 1991 (24 ref, Eng).

A study conducted to determine the influence of nitrogen, phosphorus and planting density on various growth and yield attributes in chamomile *M.chamomilla* grown under Bangalore conditions, suggests that essential oil yield can be significantly enhanced by adopting a spacing of 30 x 20 cm and supplying nitrogen at 60 kg/ha and either 30 or 60 kg P/ha. Increased flower head yield was found to be the primary contributing factor for higher essential oil yields.

9203-1411 Hatano, K., Shoyama, Y., Nishioka, I.(Faculty of Pharmaceutical Sciences, Kyushu University, 3-1-1 Maidashi, Higashi-ku, Fukuoka 812, Japan) **Cultivation studies on clonally propagated Pinellia ternata.** *Shoyakugaku Zasshi*, v. 45(3): p. 203-205, 1991 (6 ref, Eng).

By culturing in phytotron, the effect of temperature on the growth of *P.ternata* was studied. 25 degree C appeared to be the most favourable for the increase of yield. For the multiplication rate, temperatures slightly lower than 25 degree C were more effective. It became evident that when smaller tubers were cultivated at a higher planting density with an application of a higher amount of fertilizer, the tubers, grew rapidly in size. The total number of tubers gradually increased from September to October. The 1,800 tubers planted produced approximately 30,000 tubers after a 2-year-cultivation period.

9203-1412 Hemadri, K.(Regional Research Centre(Ay.), Vijayawada, AP, India) **Tree plantations of medicinal importance through social forestry schemes in Andhra Pradesh.** *Bulletin of Medico-Ethnobotanical Reseaech*, v. 12(1-2): p. 73-77, 1991 (Eng, Hin).

About 50 tree species, familier to the Andhra Pradesh forests, whose resin, gum, root, stembark, heartwood, leaf, flower, fruit or seed, are recommended for Social Forestry and afforestation. Large scale plantation of a few trees such as *Saraca asoca, Alstonia scholaris* and *Putranjiv roxburghii*, which are thriving well in the various gardens of the State is suggested in view of their ever increasing demand in the pharmaceutical industry. Plants are arranged alphabetically, alongwith their local and sanskrit names and parts used.

9203-1413 Hofbauer, J.(Concern Research and Breeding Institute for Fodder Plants, Troubsko, Czechoslovakia) **Possibilities of cultivation and agricultural use of Coronilla varia L in Czechoslovakia and in the world. (Abstract of the paper presented at Symposium on Prospects of Therapeutical and Economic use of Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 110-111, 1989 (Eng).

On the basis of the results, it was concluded that *C.varia* can be cultivated as an anti-erosion plant, fodder crop and/or ornmental plant. Approved cultivars are available in the USA, Hungary and France.

9203-1414 Kapoor, A.S.(HP Krishi Viswa Vidyalaya, Regional Research Station, Kukumseri 175 142, HP, India) **Kuth needs to be conserved in the high hills.** *Indian Farming*, v. 41(9): p. 15-16, 1991 (Eng).

Propagation, cultivation, uses and need for conservation of end angered *Saussurea lappa* have been discussed.

9203-1415 Kharya, M.D., Garg, S.C., Dixit, V.K., Varma, K.C. (Department of Chemistry, Dr HS Gour Vishwavidyalaya, Sagar, MP 470003, India) **Increased herb and essential oil yield of Cymbopogon citratus (DC) Stapf by manure and fertilizer application.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.45*, Oct 21-23, 1991 (Eng).

Successful cultivation of commercially valuable *C.citratus* on relatively poor hill top soil of the University Campus is indicative of the fact that large tracts of oosar and forest land available in plenty in the state of Madhya Pradesh can be utilized for growing this citral rich grass. The crop responded favourably with manure and fertilizer applications. The application of manure coupled with that of NPK in single and double doses brought out an increase in essential oil per clone (essential oil yield 3.96+0.0 ml on 1300+70 gm) to the tune of 142 percent more than control in the first crop (essential oil yield 1.62+0.18 ml on 720+118.0 gm average clone wt.). The increase in essential oil yield per clone was more conspicuous in second crop where the yield per clone (average clone wt 1656+134 gm) was 387 percent more than its control counterpart (essential oil yield 0.95+0.16 ml on 638+93 gm anverage clone wt.) (Abstr. No. B-01).

9203-1416 Khode, P.P., Thakare, R.D., Sethi, H.N.(Nagarjun Medicinal Plants Garden, Panjabrao Krishi Vidyapeeth, Akola 444 104, Maharashtra, India) **Effect of different spacing and fertilizer doses on foliage and oil yields on palmarosa.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.73*, Oct 21-23, 1991 (Eng).

A field experiment was undertaken on palmarosa (variety IW-31245) during 1988-89 and 1989-90 to study the effect of different spacing and fertilizer doses on folaige and oil yield. Spacing treatment S3 (30x60 cm) gave a higher dry foilage yield over treatment S1 (30x30 cm). In fertilizer doses treatment N3 (75 kg N/ha.) was found superior to N1 (25 kg N/ha.). In oil content treatment S3 (30x60 cm) was found superior to S1 (30x15 cm) and fertilizer dose N4(100 kg N/ha) was found better than treatment N1 (25 kg N/ha) and N2 (50 kg N/ha). Regarding oil yield spacing treatment S3 (30x60 cm) was the best. Fertilizer treatment N4 (100 kg N/ha) and N3 (75 kg N/ha). which were found superior to treatment N1 (25 kg N/ha) yielded 21.67 kg oil/ha and 62.00 kg oil/ha. respectively. (Abstr. No. B-23).

9203-1417 Korla, B.N., Rattan, R.S., Goyal, R.K.(Dr Y S Parmar University of Horticulture and Forestry, Solan 173230, HP, India) **Performance of turmeric (Curcuma longa) under mid-hill conditions of Himachal Pradesh.** *Indian Journal of Agricultural Sciences*, v. 62(2): p. 135-138, 1992 (9 ref, Eng).

Eleven cultivars evaluated for their performance showed significant differences in plant height, leaves/plant, leaf length and breadth, rhizome length and breadth, yield/plant and yield/ha. The curcumin content, essential oil and oleroresin also showed considerable variation. Local cultivar ('ST 323') though good for horticultural traits, proved poor in quality attributes.

9203-1418 Kuldeep Singh(Regional Research Laboratory, Canal Road, Jammu-Tawi-180001, J & K, India) **Weed control in Japanese mint; Part 2: Critical period of weed pressure.** *Indian Perfumer*, v. 35(3): p. 122-124, 1991 (6 ref, Eng).

Critical period of weed pressure in Japanese mint *Mentha arvensis* ssp. *haplocalyx* var. *piperascens* was found to be 4 to 14 weeks after planting. Handweeding operations performed earlier than 4 weeks or beyond 14 weeks did not fetch any additional increase in yields of herbage and essential oil as well as nutrient uptake by crop.

9203-1419 Maheshwari, S.K., Gangrade, S.K. , Chouhan, G.S. (Medicinal and Aromatic Plants Project, JNKVV, Indore, MP, India) **Influence of planting geometry on irrigated palmarosa oil grass.** *Indian Perfumer*, v. 35(3): p. 177-180, 1991 (4 ref, Eng).

Herbage and oil yield was significantly higher at 30x15 cm spacing and tiller and leaf number were enhanced to a sizable extent. Herbage yield showed positive significant correlation with oil yield and leaf number. The dry matter was also positively correlated with tiller number. The oil yield had significant association with tiller and leaf number.

9203-1420 Mallick, U.C., Chatterjee, S.K., Sahu, S.K.(Regional Plant Resource Center, Nayapalli, Bhubaneswar 751015, Orissa, India) **Studies on effect of bio fertiliser, leaf mould and farm yard manure on shoot and root yield, and alkaloid content of Ipecac (Cephaelis ipecacuanha).** *Orissa Journal of Agricultural Research*, v. 4(1&2): p. 17-22, 1991 (3 ref, Eng).

Three experiments on effects of azotobacter, leaf mould and farm yard manure on root and shoot yield, root to shoot ratio and alkaloid content of Ipecac were taken up. The data revealed that higher levels of leaf mould, farm yard manure and azotobacter increased the shoot and root yield and alkaloid content of ipecac root. Azotobacter proved to be the best among the three for increasing the shoot and root yield and alkaloid content of root. Significant correlation existed between the alkaloid and root yield. NSL, New Delhi.

9203-1421 Mantri, A.R., Agrawal, Y.C.(Department of Post Harvest Process and Food Engineering, College of Technology, G.B. Pant University of Agriculture & Technology, Pantnagar 263 145, UP, India) **Effect of process variations on dried ginger quality.** *Indian Food Packer*, v. 45(6): p. 33-36, 1991 (14 ref, Eng).

The effect of process variation such as slicing, pretreatment and drying of unpeeled ginger (*Zingiber officinale*) for comparison with peeled ginger by conducting the drying at 65 degree C and determining the biochemical and organoleptic quality was studied. Results showed that slicing could be adopted if the increased initial investment in slicer and larger dryer due to reduced tray load can be afforded. Pretreatment with 2 percent lime solution adds an operation into the process line without giving much advantage and drying of unpeeled ginger is not recommended. NSL, New Delhi.

9203-1422 Pal, S., Suresh Chandra, Balyan, S.S., Ajit Singh, Kaul, B.L.(Regional Research Laboratory, Jammu 180001, J&K, India) **Nitrogen requirement of new lemon grass strain CKP-25.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.71*, Oct 21-23 (Eng).

A field study was conducted during 1988 and 1989 to investigate the requirements of nitrogen of newly evolved strain of lemon grass, namely CKP-25. In the first year crop, the doses tried were 0,90,120,150 and 180 kg N/ha, which were increased to 0,160,220,280 and 340 kg N/ha for the second year crop. Results of the first year study showed that there was no significant difference in the herb and oil yield due to the nitrogen doses of 120,150 and 180 kg N/hectare but maximum yield of herb (46.5 T/ha and oil) 225.3 kg/ha) was obtained under the doses of 180 kg N/ha which was 21.7 per cent higher than the control. In the second year crop, the highest dose of 340 kg N/ha gave significant increase in both herb and oil yield over the other treatments. Thus, the study shows that the nitrogen requirement of the crop is considerably less in the first year than in the 2nd year. (Abstr. No. B-22).

9203-1423 Pande, V.N., Tiwari, K.C., Yadav, B.B.L., Pant, S.C. (Amalgamated Unit C C R A S Tarikhet (Ranikhet), UP, India) **An experiment in acclimatization of medicinal plants.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 51-72, 1991 (13 ref, Eng, Hin).

In the Ranikhet farm/garden of Central Council for Research in Ayurveda and Siddha located in Kumaon hills in a pine dominated temperate region, experiments have been carried-out to grow and acclimatize the plants from plains, sub-tropical, alpine and sub-alpine zones for two decades. The results of successful as well as unsuccessfull ones have been summarised. While in the temperate climate of Ranikhet a number of plants from plains/sub-tropical areas have acclimatized themselves, grew and developed at normal rate, plants of alpine (High Himalayan) region normally did not survive.

9203-1424 Pareek, S.K., Maheshwari, M.L., Gupta, R.(National Bureau of Plant Genetic Resources, New Delhi 110012, India) **Recent advances for improving vetiver (Vetiveria zizanioides) cultivation in India.** *International Symposium on Newer Trends in Essen.Oils & Flavs held at RRL, Jammu, J&K, India. p.18*, Oct 21-23, 1991 (Eng).

The bureau has developed and released "Hybrid-8", a new culture of vetiver for obtaining high root and oil yield. In the last 4 years, improved cultivation practices have been developed for this culture on several agronomic parameters, prominent being the maintenance of plant population at 60,000 plant/ha for producing optimum root and essential oil yield. Intercropping of Kharif legumes like greengram, blackgram and clusterbean increased the overall profit. The use of 80 kg N/ha and 30 kg/ha each of P2O5 and K2O gave maximum yield over average fertile soil. The irrigation requirement is met at 0.4 IW/CPE ratio where average annual rainfall is around 500 mm. (Abstr. No. SL-08).

9203-1425 Pratibha Devi(Department of Botany, Osmania University, College for Women, Hyderabad, AP, India) **Growth estimates of sewage irrigated coriander and**

fenugreek. *Advances in Plant Sciences*, v. 4(2): p. 394-396, 1991 (Eng).

In a survey conducted on the outskirts of Hyderabad city, where such sewage water are left out into the fields, a very luxurient growth of all types of crops was observed, especially Coriander and Trigonella. Hence a comparative study was conducted by sowing the seeds of *Coriandrum sativum*(Coriander) and *Trigonella foenum-graecum*(Frenugreek) in such a sewage irrigated field and comparing its growth responses with controls maintained in an ordinary field irrigated with tap water. An increase in growth and yield was observed in sewage irrigated plants which indicate that the sewage water can substitute as very cheap fertilizer.

9203-1426 Rajeswara Rao, B.R., Kailash Singh, Kaul, P.N., Bhattacharya, A.K.(Central Institute of Medicinal and Aromatic Plants, Regional Centre, Boduppal, Hyderabad 500 039, India) **Response of palmarosa (Cymbopogon martini) (Roxb.) Wats. var. motia Burk.) to plant spacings and nitrogen fertilizer application.** *International Journal of Tropical Agriculture*, v. 8(3): p. 177-183, 1990 (Rec. 1992, 7 ref, Eng).

A field study for two consecutive years (1984-86) on palmarosa showed that the production of biomass and essential oil, the NPK uptake and the net profit were maximum with 30 x 30 cm spacings and they were statistically at par with 45x30 cm spacing. The application of 160 kg N/ha per year produced the highest amount of biomass and essential oil, and increased the net profit and NPK uptake by the crop. The nitrogen response of the crop was quadratic. The nitrogen use efficiency decreased with increasing levels of nitrogen. The apparent recovery by the crop was low (less than 35 percent).

9203-1427 Reddy, G.S., Krishnan, R.(Agricultural Research Station, DCMS Buildings, Kamalanagar, Anantapur 515001, AP, India) **Effect of redundancy in planting densities on berry yield and solasodine content in Solanum viarum Dunal.** *Indian Drugs*, v. 29(5): p. 230-232, 1992 (6 ref, Eng).

Higher dry berry and solasodine yield per hectare was realised in 60 x 60 cm spacing treatment, having highest planting density. Within the planting density range of 13,900 to 27,800 plants/ha redundancy in plant population limited berry yield/unit area. But solasodine yield/ha was higher in 27,800 plants/ha as compared to 13,900 plants/ha.

9203-1428 Sood, R.P., Bikram Singh, Virendra Singh(CSIR Complex, Palampur-Himachal Pradesh-176061, India) **Yield and quality of Rosa damascena oil produced in mid-hills of Kangra in north-western Himalayan region in India.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.29*, Oct 21-23, 1991 (Eng).

Preliminary trials conducted systematically during the last three years at Palampur have shown the prospects of cultivation of *R.damascena* as a commercial crop in this region. The Bulgarian strain o. *R.damascena* was introduced on pilot scale and a programme was initiated to work out the total package of practices for cultivation and to explore the possibilites for its commercialisation. Around ten acres of land has been taken up under the cultivation of *R.damascena* which started yielding rose oil during second year of cropping. One litre of quality oil has been distilled and evaluated for its quality. An average yield of 0.045 percent of oil, with total alcohol contents upto 83.4 percent was recorded in lab scale. The oil has agreeable and true note of Bulgarian rose oil. Thirtythree major chemical constituents have been determined in the oil. The studies have revealed that high quality rose oil can be produced in the hilly regions of the state. (Abstr. No. C-06).

9203-1429 Upadhye, A.S., Kumbhojkar, M.S. , Vartak, V.D. (Department of Botany, Maharashtra Association for the Cultivation of Science Research Institute, Pune 411 004, Maharashtra, India) **Cultivation of medicinal plants along sea-coasts in Maharashtra.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 32-39, 1991 (7 ref, Eng, Hin).

An enumeration of 26 plant species worth for cultivation along sea -coast is presented. Plants enumerated are arranged alphabetically with botanical, local name(s), and family name.

9203-1430 Verma, P.K., Sharma, G.D., Talwar, G., Hooda, J.S.* (Department of Plant Breeding, Haryana Agricultural University, Hissar 125004, Haryana, India) **Scope of medicinal plants in Haryana.** *Journal of Scientific Research in Plants & Medicines* , 10(1-4): p. 10-15, 1989 (Recd. 1991, Eng).

Medicinal plants are very important cash crops for future as out of 2000 medicines mentioned in Rig Veda and Ayurvedic texts, about 80 percent are of plant origin and these are being used under old tradition of Ayurvedic system of medicine. On the basis of research findings, it is clear that the crops like Isabgol (*Plantago ovata*), Mulhatti/Liquorice (*Glycyrrhiza glabra*), Sarapgandha (*Rauvolfia serpentina*), Sadabahar (*Vinca rosea*) syn. (*Catharanthus roseus*), Basil (*Ocimum sanctum*) and Mint (*Mentha arvensis*) can be grown successfully and quite profitably under different agro-climatic conditions of Haryana.

Botany (General & Systematic)

9203-1431 Bakker, M.E., Gerritsen, A.F., Van Der Schaaf, P.J. (Rijksherbarium/Hortus Botanicus, PO Box 9514, 2300 RA Leiden, The Netherlands) **Development of oil and mucilage cells in Cinnamomum burmanni: An ultrastructural study.** *Acta Botanica Neerlandica*, v. 40(4): p. 339-356, 1991 (23 ref, Eng).

Three arbitary developmental stages in the development of oil and mucilage cells in shoot apex and young leaves in *C.burmanni* have been distinguished. For the first time, couple-like wall structures are reported in mucilage cells. Oil formation has been reported to take place within the plastids and results in the distintegration of the plastids. IARI, New Delhi.

9203-1432 Colson, M., Tetenyi, P., Perrin, A.(Department of Botany, University of Saint Etienne, 42023 Saint-Etienne, France) **Characterization of foliar appendages and essential oils of Ocimum gratissimum L. leaves.** *Herba Hungarica*, v. 30(3): p. 5-14, 1991 (8 ref, Eng, Hun).

Glandular hairs, four-celled headed and two-celled headed capitate glandular trichomes of *O.gratissimum*(eugenol type) are described as well as non-glandular trichomes and the appearance of the cuticle from leaves. Methods of scanning electron microscopy and of essential oil distillation are presented. The development of secretory system and its importance for botanic determination is discussed.

9203-1433 Hinz, P.A.(Conservatoire et Jardin botaniques de la Ville de Geneve, Case postale 60, CH-1292 Chambesy/GE) **Biosystematical studies of the Digitalis purpurea L. aggregate(Scrophulariaceae) in the western Mediterranean area. XII. Synthesis.** *Candollea*, v. 45(1): p. 181-199, 1990 (50 ref, Fre , Eng).

The *D.purpurea* aggregate includes four species: *D.purpurea, D.thapsi, D.mariana* and *D.minor*. Three of them are endemic to the Iberian Peninsula or the Balearic Islands. Only the *D.purpurea* extends beyond the Pyrenees. With reference to their identical chromosome number, these species are schizoendemics. Reproductive isolation between them is in general not complete. Zones of introgression have been shown between *D.purpurea* and, respectively, *D.thapsi* and *D.mariana*. Only the *D.minor* seems to be completely separated from *D.purpurea*. A definition of the aggregate is given further to the results obstained and a key provided for identification of the species and the infraspecific taxa. Finally, a scheme of evolution is proposed. Phylogenetic analysis reveals the relation of evolution of longevity, corolla and pilosity according to the occupation of various habitats. Speciation and differenciation of the species are also interpreted according to paleohistory and present-day geography of the western mediterranean basin.

9203-1434 Hinz, P.A.(Conservatoire et Jardin botaniques de la Ville de Geneve, Casen postale 60, CH-1292, Chambesy/GE) **Biosystematical studies of the Digitalis purpurea L. aggregate(Scrophulariaceae) in the western Mediterranean area. XI. Digitalis purpurea.** *Candollea*, v. 45(1): p. 125-180, 1990 (84 ref, Fre, Eng).

By means of factorial analysis of correspondence the variability of the mediterranean populations of *D.purpurea* are studied. Three natural groups are pointed out, which can be attributed the rank of subspecies: *D.purpurea*subsp.*purpurea*, *D.purpurea*subsp.*toletana* and *D.purpurea*subsp.*amandiana*. Experimental observations confirm the stability of the distinctive characters in a commun environment. The ecological behaviour of the populations is compared. According to chorological data, the susbsp.*toletana* is endemic of the Montes de Toledo in Spain, allopatric with the subsp.*purpurea*, whereas the subsp.*amandiana*, endemic of the Douro valley in Portugal, is geographically sympatric with the subsp.*purpurea*, but ecologically allopatric. The *D.purpurea*subsp.*purpurea* is widely distributed on the Iberian Peninsula, in Corsica and Sardinia as well as in Morocco. It represents a very polymorphic taxon. Asystematic part sums up informations obtained for the three subspecies: description, chromosome number, iconography, habitat and distribution.

9203-1435 Majumder, R.(Regional Research Centre(Ay.), Government Ayurvedic College, Guwahati 781 014, Assam, India) **Some threatened medicinal plants from the North-Eastern region of India.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 12-16, 1991 (10 ref, Eng, Hin).

The author has surveyed the medicinal flora of North-Eastern Region of India and 40 of such threatened medicinal plants are enumerated.

9203-1436 Menke, H.(Im Krausfeld 8, 5300 Bonn 1, Germany) **(Teneriffa and gomera: Pharmacobotanical excursion to Canary Islands).** *Deutsche Apotheker Zeitung*, v. 131(48): p. 2545-2550 , 1991 (48 ref, Ger).

Geography and climate of Canary Islands have been described along with the flora of the area including medicinal plants.

9203-1437 Reddy, N.P., Rao, M.D.(Department of Botany, Kakatiya University, Warangal 506 009, AP, India) **Heterostyly in Jasminum L.(Oleaceae).** *Journal of the*

Swamy Botanical Club, v. 8(3&4): p. 101-103, 1991 (16 ref, Eng).

The presence of heterostyly has been reported in collection of 2 species of *Jasminum*, both fresh and preserved at Madras Herbarium Coimbatore. Most of them occur either in pin form or in thrum form only. The species *J.malabaricum*, *J.flexile* and *J.auriculatum* occur in pin and thrum conditions with usual dimorphism in pollen and stigmatic papillae. Self and cross pollination experiments were conducted on some of the species only. The incompatibility was found absolute in *J.primulinum* and *J.grandiflorum* but relaxed in *J.auriculatum*. NSL, New Delhi.

9203-1438 Van Aelst, A.C., Van Went, J.L.(Department of Plant Cytology and Morphology, Wageningen Agricultural University, Arboretumlaam 4,6703 BD- Wageningen, The Netherlands) **The ultrastructure of mature Papaver dubium L. pollen grains.** *Acta Botanica Neerlandica*, v. 40(4): p. 319-328, 1991 (18 ref, Eng).

Mature pollen grain of *P.dubium* was found to be bicellular. The exine was found composed of nexine, bacula and perforated tectum. The vegetative cell contained numerous mitochondria, small vesicles and ribosomes, which were reduced in generative cells. The generative cell was of spindle shape with tail-like extensions and showed an undulating outline in transverse sections. IARI, New Delhi.

Breeding & Genetics

9203-1439 Bakshi, S.K., Jotshi, P.N., Kitchlu, S.(Regional Research Laboratory (Branch), Sanat Nagar, Srinagar 190005, Kashmir, J&K, India) **Breeding of a new aroma hop variety in Kashmir.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.77*, Oct 21-23, 1991 (Eng).

Hop breeding programme carried out during last decade at Srinagar branch of RRL, Jammu has yielded a new variety of aroma hops bearing pedigree No. RRL (H)9x18-9. The genotype resulted from a cross in 1981 between local female and male seedlings. It was tested as a single nursery plant from 1982-84. As a mature plant it produced 2 to 2.5 kg fresh hops per plant. In a replicated trial it produced a calculated yield of 1999 kg/ha (under 2m x 1m spacing) and 1314 kg/ha (under 2mx2m spacing). The average alpha-acids and beta-acids content is 5.7 and 5.3 percent respectively on dry weight basis. The alpha-acids contain 23 percent cohumulone, 76.4 percent humulone and adhumulone. The essential oil(0.6 to 0.7 ml/100g) contain 10.3 percent B- caryophyllene and 31.1 percent humulene with a characteristic absence of farnesene. According to the content and composition of essential oils and bitter acids, it is similar to fine European aroma hop varieties. (Abstr. No. B-28).

9203-1440 Chabra, A.K., Sharma, G.D., Md Khabiruddin, Hooda, J.S. (Medicinal & Aromatic Plants Section, Department of Plant Breeding, Haryana Agricultural University, Hissar 125004, Haryana, India) **Genetic variation and possibilites to improve oil content in palmarosa Cymbopogon martini var. motia (Roxb.) Wats.** *International Symposium on Newer Trends in Essen.Oil & Flavs, RRL Jammu, J&K, India. p.68-69*, Oct 21-23, 1991 (Eng).

In order to select promising genotypes of palmarosa for increased oil content germplasm lines from various geographical regions were collected (51 germplasm lines are available at HAU Hissar). A number of promising genotypes and phenotypes with high oil content have been selected. (Abstr. No. B-20).

9203-1441 Elhag, H.M., El-Domiaty, M.M. , El-Feraly, F.S., Mossa, J.S., El-Olemy, M.M.(Department of Pharmacognosy, College of Pharmacy, King Saud University, PO Box 2457, Riyadh 11451, Saudi Arabia) **Selection and micropropagation of high artemisinin producing clones of Artemisia annua L.** *Phytotherapy Research*, v. 6(1): p.20-24, 1992 (16 ref, Eng).

An in vitro micropropagation method has been used to clone *A.annua* plants from axenic seedlings or field grown plants selected on the basis of morphological characteristics during the growing season. Clones were maintained in culture by continous transfer every 4-6 weeks. The performance of the various clones in the field as well as their contents of artemisinin and related sesquiterpenes were compared with selected field grown plants. An internally standardized reverse-phase HPLC method was developed for this evaluation. Artemisinic acid was by far the major sesquiterpene for all clones tested, followed by arteannuin B and then artemisinin. However, there was a high degree of variability between various clones for all sesquiterpenes tested. The high artemisinin producing clones are characterized as tall robust plants with long internodes, open branching, dense leaves and thick stems. Results from unorganized callus cultures initiated from the leaves of the corresponding clones did not indicate the formation of artemisinin or related sesquiterpenes in these cultures.

9203-1442 Gupta, Suresh, Sobti, S.N., Sarin, Y.K.(Regional Research Laboratory, Jammu 180001, J&K, India) **Development of a linalool rich strain of Ocimum canum Sims.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.62* , Oct 21-23, 1991 (Eng).

Collections of linalool containing strains of *O.canum* were made from West Africa and Kerala. These strains were acclimatised under Jammu conditions for a few generations. Both way crosses were made in selectants from both the strains. Further selections were made in F1, F2 and F3 generations on the basis of herb yield, oil percent and linalool content. As a result of statistically organised hybridizational programme a strain rich in linalool (containing as high as 75-85 percent linalool) was developed. In addition to its linalool content, this strain has better oil as well as herb yield as compared to that of its parents. The essential oil obtained from the fresh herb was chromatographically analysed and found to be better than that obtained from the other sources. This strain is easier to cultivate and a relatively cheaper source of linalool. (Abstr. No. B-15).

9203-1443 Kak, S.N., Pal, S., Kaul, B.L.(Regional Research Laboratory, Jammu 180001, J & K, India) **Comparative performance of improved strains of Japanese mint Mentha arvensis L..** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.66*, Oct 21-23, 1991 (Eng).

A number of improved strains of *M.arvensis* var. *piperascens* have been developed and released for commercial cultivation. Comparative agronomic performance of five strains (RRL J/11, RRL J/49, Shivalik, Hybrid-77 and MAS-1) over a period of two years has shown that Shivalik variety excelled over other varieties in fresh herb and oil yield attributes. However, as regards menthol content in the oil, Hybrid-77 variety was found to be superior compared to others under the agro-climatic conditions of Jammu region. (Abstr. No. B-18).

9203-1444 Kaul, B.L.(Regional Research Laboratory, Jammu Tawi, J&K, India) **Successful use of mutation breeding technique for the genetic improvement of some aromatic plants.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.24*, Oct 21-23, 1991 (Eng).

Dormant suckers/stolons/vegetative slips of *Mentha arvensis, M.citrata, M.spicata, Cymbopogon flexuosus* and *C.nardus* var. *confertiflorus* were subjected to various doses of X-or gamma rays with a view to generating adequate genetic variability. Desirable mutants were isolated and propagated through two vegetative cycles. The study resulted in the development of several mutant clones which include high menthol containing strains of *M.arvensis* having 80 percent menthol, strains having increased linalool (72 percent) and linalyl acetate (44 percent) in *M.citrata*; strains of *M.spicata* having 61-78 percent carvone, a clone of *C.nardus* var. *confertiflorus* with 40 percent geranyl acetate. The study also resulted in the isolation of mutant clones of *C.flexuosus* deficient in methyl eugenol component of the oil. The induction of various biochemical mutants has been attributed to the changes produced by ionising radiations in the genetic system which regulates biosynthesis of essential oils. (Abstr. No. SL-12).

9203-1445 Khosla, M.K.(Regional Research Laboratory, Jammu Tawi 180001, J&K, India) **Exploitation of Ocimum carnosum species as a potential source of elemicin.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.55*, Oct 21-23, 1991 (Eng).

O.carnosum an exotic South American species, has been successfully introduced in India, yielding an essential oil rich in elemicin. The essential oil besides having flavoring properties is highly prized for its pharmaceutical value. Keeping in view the immense importannce of this species, an improvement programme of genetic upgradation involving modern breeding techniques and extensive recurrent selection were adopted for evolving high yielding better quality strain. The newly developed *O.carnosum* strain having elemicin upto 60-65 percent could be exploited for commercial use. (Abstr.No. B-09).

9203-1446 Kukreja, A.K., Dhawan, O.P., Mathur, A.K., Ahuja, P.S. (Central Institute of Medicinal and Aromatic Plants, Post Bag No. 1, Ram Sagar Misra Nagar, Lucknow 226016, UP, India) **Genetic improvement of mints: Screening and evaluation of in vitro derived clones of Japanese mint for quantitative and qualitative traits.** *International Symposium Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.91-92*, Oct 21-23, 1991 (Eng).

Under a genetic improvement programme of mints using in vitro techniques a procedure has been standarised for high frequency plant regeneration response from nodal explant cultures of Japanese mint *Mentha arvensis* ssp *haplocalyx* var *piperascens*). Murashige and Skoog's medium supplemented with IAA or NAA (0.5-2.0 mg/l) alone supported axillary shoot elongation while BSP (2.0-3.0 mg/l alongwith IAA (1.0 mg/l) supported multiple shoot production. In vitro derived shoots readily developed roots when cultured on NAA (1.0 mg/l) fortified MS medium. Regenerated plantlets were transferred to glasshouse and ultimately to the field with a high (90-95 percent) rate of survival. A range of variation was observed for agronomic traits i.e plant height (32.0-92.0 cm), leaf stem ratio (0.53-2.32), herb yield (0.66-5.22 ml/plant). A positive correlation is observed for oil yield with plant height and herb yield whereas a negative correlation exists between herb yield and oil content. Based on initial assessment on individual plant basis 27 somaclones were selected. (Abstr. No. BT-P7).

9203-1447 Narayana Gowda, J.V., Farooqi, A.A.(Division of Horticultural Sciences, University of Agricultural Sciences, GKVK, Bangalore 560065, Karnataka, India) **Genetical studies in open pollinated seedlings of Jasminum auriculatum Vahl..** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.46*, Oct 21-23, 1991 (Eng).

Studies on the variability in the open pollinated seedlings of *J.auriculatum* clones viz. short round long point and parimullai indicated high variability with flower yield and low variability with corolla tube length, flower bud length, diameter and bud weight. The flower yield exhibited wide variability with co-efficient of variation of 65.75-90.36. The corolla tube length and flower diameter exhibited a high heritability of 90-98 percent. Genetic advance was higher for yield and flower bud weight but low with corolla tube length, flower bud diameter and bud length. The environmental influence was high for yield and low for other characters studied. (Abstr. No. B-02).

9203-1448 Nishizawa, A., Honda, G.*, Tabata, M.(Faculty of Pharmaceutical Sciences, Kyoto University, Yoshida Shimoadachi-cho, Kyoto 606, Japan) **Genetic control of crinkled leaf in Perilla frutescens.** *Shoyakugaku Zasshi*, v. 45(3): p. 227-231, 1991 (5 ref, Eng).

By using the CRINKLED LEAF INDEX (CLI) devised for the purpose of evaluating the degree of crinkle, the inheritance of crinkled leaves in *P.frutescens* var. *acuta* was investigated. The data on the F1 and F2 obtained from the cross between a crinkled leaf ("Chirimen") strain and a flat leaf ("Ohba") strain indicated that the crinkled leaf is mainly controlled by one dominant gene. The data on the cross between a crinkled leaf strain of *P.frutescens* var. *acuta* and *P.frutescens* var. *japonica* ("Egoma") having thick flat leaves suggested that the latter possesses more than two dominant factors which inhibit the crinkling of leaves.

9203-1449 Patra, P., Sahoo, S.(Regional Research Laboratory, Bhubaneswar 751013, Orissa, India) **Induction of dwarf lemongrass genotype by chemical mutagen for high oil content.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.48*, Oct 21-23, 1991 (Eng).

Eighteen hours presoaked lemongrass seeds of SD-68 were treated with 0.625 to 0.25 percent ethyl methanesulphonate, 0.05 to 0.20 percent, N-methyl-N-nitro-N-nitrosoguanidin and 500 to 2000 ppm of maleic hydrazide for four hours during June, 1988 to induce mutation. The mutant selection and progeny evaluation studies recorded new economic plant types like Tall, Dwarf, narrow leaf besides evolving one leaf Chimera (ornamental), in lemongrass. Among the mutants Dwarf genotype had recorded increased oil content 0.50 per cent as against 0.35 percent in the control without any significant difference in its herbage yield. One of the natural dwarf genotype isolated also contained high oil percentage. Hence, it is suggested that breeding dwarf lemongrass strain will increase its oil production. (Abstr. No. B-04).

9203-1450 Ram, G., Singh, C., Dewan Chand , Kaul, B.L.(Regional Research Laboratory, Jammu 180001, J & K, India) **Study of correlation and path analysis of some yield contributing traits in dill (Anethum graveolens L.).** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.74*, Oct 21-23, 1991 (Eng).

Correlation and path-coefficient analysis of *A.graveolens* was computed on nine accessions namely 5930.1, 5932.5, 5933.2, 5934.9 (A) Imbnoxja, SZF-286, Sukullus, 5934.9(B), and 5933.2(B). Significant positive association of plant height was observed with number of umbels/plant, weight of umbels/plant and seed yield in accession 5930.1, 5932.5, 5933.2, 5934.9(A), Imbnoxja, SZF-286, Sukullus and 5934.9(B). Path-coefficient analysis revealed that number of umbels/plant, weight of umbels/plant and plant height showed a direct positive effect on seed yield/plant in accession 5932.5, 5933.2, 5934.9(A), Imbnoxja, Sukullus and 5934.9(B) only. Information gathered through path analysis was used to detect the direct as well as indirect effects of the variables under study which could contribute to the yield of the plant. (Abstr. No. B-25).

9203-1451 Rao, B.L., Sobti, S.N.(Regional Research Laboratory, Canal Road, Jammu Tawi 180 001, JK, India) **Ckp-25, A hybrid lemongrass.** *Indian Perfumer*, v. 35(3): p. 148-149, 1991 (2 ref, Eng).

A high oil yielder hybrid lemongrass strain produced from the cross of *Cymbopogon khasianus* and *C.pendulus* as an atlerante source for citral is described.

9203-1452 Rao, B.L., Sobti, S.N., Sarin, Y.K. , Kaul, B.L. (Regional Research Laboratory, Jammu Tawi, 180001, J&K, India) **CKP-25- An additional source for citral.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.63*, Oct 21-23, 1991 (Eng).

To enhance the lemon grass oil production in India many improved strains of lemon grass were developed from *Cymbopogon flexuosus* and *C.citratus*. Strain RRL-16 *C.pendulus* was developed and released by RRL-Jammu 1n 1973. *C.pendulus* being self- incompatible under Jammu conditions and unable to produce its own seeds, further improvement through progeny was not possible. So crosses were made to get hybrids with another hexaploid citral bearing *Cymbopogon* i.e *C.khasianus* and selections were carried out from its F1 and F2 derivatives. In F1 genertation one of the hybrid Ckp-25 proved to be high oil yielding. Further selections in Ckp-25 proved to be superior in the yield of oil in turn resulting in high citral yield per unit area. (Abstr. No. B-16).

9203-1453 Sarin, Y.K., Agarwal, S.G., Thappa, R.K., Kuldeep Singh, Kapahi, B.K.(Regional Research Laboratory, Jammu 180001, J&K, India) **High yielding citral rich strain of Ocimum americanum Linn. from India.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.76*, Oct 21-23, 1991 (Eng).

A new variety of *O.americanum* rich in citral, an important aroma chemical, has been developed by natural selection and raised for two successive sowing seasons in relation to seasonal variations in herb yield and oil content, chemical variation and citral content, diseases and crop pattern/period. The new strain has been developed as short duration crop (100 days) for the production of citral (76 percent) rich oil. Comprehensive 13C-NMR analyses aided by 1H-NMR, GC and MS of the volatile oil from fresh herb revealed the occurrence of citral a and citral b as the major constituent (76 percent), in addition to geraniol, nerol, linalool, citronellol, their esters and p-meth-1-ene, limonene, myrcene, caryophyllene, beta-farnesene and beta-bisabolene. (Abstr. No. B-27).

9203-1454 Sethi, K.L.(NBPGR, Pusa Campus, New Delhi 110012, India) **Genetic diversity and improvement through hybridization in palmarosa.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.49-50*, Oct 21-23, 1991 (Eng).

Thirty seven genepool samples collected from wild sources in natural stands of central India and evaluated for agro-botanical traits, oil content and odour value, showed that IW 4478, IW 4479 and IW 4480 possessed high herbage yield (total of three harvests). Highest oil content (FWB) was recorded in IW 4476, IW 4478 (0.52 percent) and IW 4492 (0.45 percent), all these collected from region 1. Another five accessions numbering IW 4498, IW 4511, IW 4513, IW 4515 and IW 4516 possessed low oil percentage but had high geraniol percentage. Therefore to bring in larger diversity, distant collections from two regions were selected as parents to combine herbage yield and oil quality through hybridization.Thus a total of 13 such selected progenies have been mutiplied for preliminary testing alongwith three controls at NBPGR both for herbage yield and quality characters. (Abstr. No. B-05).

9203-1455 Shahi, A.K.(Regional Research Laboratory, Canal Road, Jammu Tawi 180001, J&K, India) **Cymbopogon jwarancusa (Jones) Schult. subspecies olivier (Boiss) Soenarko.- A wild aromatic grass of Indian Thar district as an additional source of citral.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.56*, Oct 21-23, 1991 (Eng).

C.jwarancusa, ssp. *olivieri*, is an important aromatic grass surviving in the uncongenial arid environment of Indian Thar desert of Rajasthan. This grass has attracted attention because of its citral content (30-50 percent), geraniol (8-11 percent), and geranyl acetate(11 percent). The essential oil content ranges from 0.8 to 1.2 percent (V/W) on fresh weight basis. A search of citral from this grass opens up a new vista for further improvement on its essential oil composition and herbage yield through genetic restructuring to make it useful commercially. (Abstr. No. B-10).

9203-1456 Sharma, J.R.(Central Institute of Medicinal & Aromatic Plants, Lucknow, UP, India) **Trends in genetic upgradation of aromatic plants.** *International Symposium on Newer Trends in Essen.Oils & Flavs held at RRL, Jammu,J&K,India,p.14-15*, Oct 21-23, 1991 (Eng).

In pursuit of an organised crop improvement programme at CIMAP, an array of genetically improved varieties in different species of aromatic plants have been developed. These improved varieties are:vars. Pragati, Cauvery and GRL-1 *Cymbopogon flexuosus* and var. Shere-Kashmir (Lavender); var. Praman *C.pendulus*, Manjusha and Mandakini (*C.winterianus*), MAS-1 and Hyb.77 *Mentha arvensis*, MSS-5 *M.spicata*, MCAS-2 *M.cardiaca*, Suprya *M.virdis* and RSL-31 (Rose), Trishna *Palmarosa*, var. Suqandha *Vetiveria*; var. Kiran *M.citrata.* (Abstr. No. SL-O5).

9203-1457 Sharma, K.C., Sharma, M.M., Sharma, R.K.(Department of Genetics and Plant Breeding, SKN College of Agriculture, Jobner 303329, Rajasthan, India) **Nature of variability and associations in fenugreek.** *Indian Journal of Genetics and Plant Breeding*, v. 50(3): p. 260-262, 1990 (Recd. 1992, 3 ref, Eng).

One hundred genotypes of *Trogonella foenumgraecum* showed significant variability for 11 characters except number of grains/pod and 1000 grain weight. The broad sense heritability, however, was high (greater than 40) for days to flowering, pods/plant, straw and grain yield/plant. It was moderate or low for plant height, branches/plant, days to maturity and pod length. Straw yield had significant direct positive effect on grain yield.

9203-1458 Verma, P.K., Sharma, G.D., Chhabra, A.K., Punia, M.S. (Haryana Agriculture University, Hissar 125004, Haryana, India) **Inter-relationship and variability studies in Palmarosa (Cymbopogon martini var. motia).** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.59-60*, Oct 21-23, 1991 (Eng).

The experimental material consisted of 34 genotypes of palmarosa planted at Hissar during August, 1985 and continued upto June, 1987. During this period, four harvests were taken and data were recorded for various morphological and yield traits. Analysis of variance revealed that there was sufficient variability with regard to all the attributes under investigation viz. plant height, tillers per clump, inflorescence length, inflorescence weight per clump, leaf weight per clump, stem weight per clump, clump weight, oil content (FWB) and oil yield per clump. Maximum genotypic and phenotypic coefficient of variation were recorded for inflorescence weight per clump (33.98 and 34.55 percent respectively) followed by oil yield per clump (22.46 and 23.61 percent respectively). This was also associated with high genetic advance (percent of mean), indicating that simple selection can prove fruitful for the improvement of these two traits. Promising genotypes were RH-49 and RH-17. (Abstr. No. B-13).

Diseases & Pests

9203-1459 Alam, M., Sattar, A., Janardhanan, K.K.(Department of Plant Pathology, Central Institute of Medicinal and Aromatic Plants, P.O. RSM Nagar, Lucknow 226016, UP, India) **Changes in phenol and peroxidase in the leaves of Java citronella infected with Curvularia andropogonis.** *Biologia Plantarum(Praha)*, v. 33(3): p. 211-215, 1991 (16 ref, Eng).

The content of phenols, o-dihydroxyphenols and peroxidase activity in healthy and *C.andropogonis* infected leaves of Java citronella (*Cymbopogon winterianus*) were determined. As a result of infection, the content of phenols and peroxidase increased two- and four-fold, respectively in necrotic lesions compared to healthy leaves. In surrounding tissue of lesions, their increase was one- and half fold only. The peroxidase activity decreased with the maturity of the necrotic lesions. Necrotic lesions produced in response to infection appear to be the consequence of higher accumulation of phenols and their oxidation by peroxidase.

9203-1460 Chourasia, H.K., Roy, A.K.(Medicinal Plants Research Laboratory, University Department of Botany, Bhagalpur University, Bhagalpur 812 007, Bihar, India) **Effect of relative humidity on fungal association and aflatoxin production in Piper longum fruits.** *Indian Botanical Reporter*, v. 8(2): p. 138-140, 1989 ((Recd. 1991; 17 ref), Eng).

The percentage incideuce of fungal flora varied with the fluctuation of the humidities. Six fungi were observed at 33 percent RH within 15 days of incubation, whereas the number increased to nine after 60 days of incubation at 96 percent RH, as well as the total fungal incidence also increased from 8.1 to 69.8 percent. The level of aflatoxin B1 production was high when the relative humnidity was between 75 and 96 percent. NSL, New Delhi.

9203-1461 Chourasia, H.K.(University Department of Botany, Bhagalpur University, Bhagalpur 812 007, Bihar, India) **Aflatoxins level in stored Strychnos seeds.** *Indian Botanical Reporter*, v. 8(2): p. 157-158, 1989 ((Recd. 1991; 12 ref), Eng).

Of 37 strains of *Aspergillus flavus* isolated from different samples of *S.nux-vomica*, 19 were toxigenic and their Afl-B1 production potential was in the range of 0.11-0.92 ug/ml of culture filtrates. Of 40 samples screened for natural aflatoxins contamination, 27 samples showed presence of AFB1 and 6 had AFB2. NSL, New Delhi.

9203-1462 Pandotra, V.R., Raina, A.K.(Regional Research Laboratory, Jammu, JK, India) **Two new diseases of Bunium persicum (Boiss.) Fedtsch. from India.** *Indian Journal of Forestry*, v. 14(4): p. 325-326 , 1991 (3 ref, Eng).

Alternaria alternata and *Mucor circinelloides* causing umbel blight and dry rot of tuber diseases respectively, of *B.persicum* have been reported for the first time. Fungicide Biltox-50 was the most effective in inhibiting the growth of both the fungi, follwed by Ceresan and Brasicol 75 WP.

9203-1463 Prem Sagar(Department of Entomology, Punjab Agricultural University, Ludhiana, Punjab, India) **Population build up pattern of cabbage semilooper on fennel and dillseed crops at Ludhiana.** *Indian Perfumer*, v. 35(3): p. 164-166, 1991 (2 ref, Eng).

The cabbage semilooper (Thysanoplusia orichalcea) appeared on fennel *Foeniculum vulgare* and dillseed *Anethum graveolens* crops on 25th February. There was a gradual build up of larval population on 7th and 17th March in both the crops and the population reached its maximum on 27th March 1991, when the mean larval population per 1 meter row length area varied from 7.3 to 12.7 (Av. 10.4) and 9.7 to 14.3 (Av. 11.9) on fennel and dillseed crops, respectively. Subsequently, there was a considerable decline on 6th April, and 16th April there was almost negligible population of the pest in both the crops. Thus, the peak period of activity of the pest was from 27th March to 6th April in both the crops. Further, on all the six dates of observations the number of larvae were marginally high on dillseed as compared to fennel crop indicating a bit of preference for the former crop.

9203-1464 Rana, K.S.(H P Krishi Viswavidyalaya, Krishi Vigyan Kendra, Dhaulakuan, HP, India) **Effect of seed selection in the management of yellow disease of ginger.** *Indian Journal of Mycology & Plant Pathology*, v. 21(2): p. 183-185, 1991 (3 ref, Eng).

The seed rhizome treatment with different fungicides before sowing did not significantly reduce the yellow disease incidence of *Zingiber officinale*, caused by *Fusarium oxysporum, f.zingiberi*.The disease was effectively checked by the use of infection free selected healthy seeds. The procedure for the seed selection has been described. NSL, New Delhi.

9203-1465 Ranjith, A.M., Pillay, V.S. , Sasikumaran, S., Mammooty, K.P.(Pepper Research Station, Kerala Agricultural University, Panniyur, Taliparamba 670141, Kerala, India) **New record of whitefly (Bemisia tabaci) on black pepper (Piper nigrum).** *Indian Journal of Agricultural Sciences*, v. 62(2): p. 166-168, 1992 (6 ref, Eng).

Incidence of adults of a whitefly congregating in a large number on the undersurface of *Piper nigrum* leaves has been reported. Cultivars 'Panniyur 1', 'Karimunda' and 'Kalluvally' were mostly attacked. Maximum population was recorded on cultivar 'Nilgiris'. Weather conditions influenced their population.

9203-1466 Sharma, R.B., Roy, A.N., Dwivedi, P.K.(Department of Botany, S D College, Hathras 204 101, UP, India) **A leaf disease of Agave.** *Advances in Plant Sciences*, v. 4(2): p.430, 1991 (Eng).

A severe leaf spot disease was observed on the surface of leaves of *Agave eoliscent during the month of October-December 1990 at Hathras in kitchen garden. The pathogen was isolated and identified as Alternaria alternata(Fr.) keissler.*

9203-1467 Sharma, S.K., Dohroo, N.P.(Department of Mycology and Plant Pathology, Dr Y S Parmar University of Horticulture and Forestry, Solan 173 230, HP, India) **Effect of soil hydrothermal regimes on the development of ginger yellows.** *Indian Journal of Plant Pathology*, v. 7(2): p. 109-111 , 1989 ((Recd. 1992; 2 ref), Eng).

Mean soil moisture was positively correlated with the disease incidence followed by overage soil temperature. A combined effect of soil moisture and temperature on disease incidence was also found to be positively correlated. The disease appeared in the first week of August and maximum disease incidence occured when soil temperature ranged between 24-25 degree C and soil moisture between 25-30 percent. NSL, New Delhi.

9203-1468 Sharma, V.(Division of Forest Protection, Forest Research Institute, Dehra Dun, UP, India) **Occurrence of nematodes in forest nurseries.** *Indian Forester*, v. 117(12): p. 1085-1086, 1991 (Eng).

A total number of 18 genera of plant parasitic and soil nematodes are reported in 26 plant species of Doon Valley. *Meloidogyne spp.* on *Acacia auriculiformis, Albizzia lebbek, Michelia champaca, Tectona grandis, Toona ciliata* and *Woodfordia fruticosa* were recorded for the first time in India.

9203-1469 Thakur, R.N., Pal, S., Rao, B.L. , Kaul, B.L.(Division of Botanical Sciences, Regional Research Laboratory, Jammu Tawi, J&K, India) **Pathogenic variation in brown blotch disease of Cymbopogon and selection of resistant lines.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.64-65*, Oct 21-23, 1991 (Eng).

The brown blotch disease in *Cymbopogon* reduced the oil contentupto 20-25 percent. Application of fungicides is not feasible because of several drawbacks in their use. The development of resistant lines/varieties is a long lasting solution for the control of diseases. Strain CKP-25, a hybrid of *C.pendulus* and *C.khasianus* was severely infected with brown blotch disease at Chatha farm during the months of July-August. In the course of investigation, it was observed that the disease is caused by *Curvularia lunata* which varied in the development of disease symptoms from place to place in the variety/spp. of *Cymbopon*, which gives the clue for the presence of physiologic races of pathogen. To find out the existence of physiologica races, if any, various parameters were studied. The results showed the isolation of three isolates (B1, B2 and B3) of *Curvularia lunata* on eight varieties/spp. of *Cymbopogon*. Thus it is possible to screen improved breeding lines for large scale cultivation. (Abstr. No. B-17).

9203-1470 Zaidi, S.N.H., Raja Ram, Zaidi, A.A., Bikram Singh, Sood, R.P.(CSIR Complex, Palampur, HP, India) **Purification of virus causing mosaic mottling disease in Rosa damascena Mill.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.70*, Oct 21-23, 1991 (Eng).

Rose plantations of Kangra valley have been found to be suffering from a viral malady. The disease is characterised by mosaic, venial chlorosis and leaf mottling symptoms of yound leaves during second year of plantation. The older leaves, in addition to mosaic, exhibit ringspot and oak leaf pattern like symptoms. Disease is mechanically sap transmissible and spread is mainly suspected during vegetative propagation through stem cuttings. Virus is partially purified from frozen infected leaves by clarification of the standard leaf sap. The detailed methodology for purification of this virus was discussed. (Abstr. No. No. B-21).

Physiology & Biochemistry

9203-1471 Agarwal, N., Kewalramani, N. , Kamra, D.N.*, Agarwal, D.K., Nath, K.(Animal Nutrition Division, Indian Veterinary Research Institute, Izatnagar 243 122, UP, India) **Effect of water extracts of neem (Azadirachta indica) on the activity of hydrolytic enzymes of mixed rumen bacteria from buffalo.** *Journal of the Science of Food and Agriculture*, v. 57(1): p. 147-150, 1991 (13 ref, Eng).

The effect of cold and hot water extracts of neem (*A.indica*) seed kernel cake on the hydrolytic enzymes of mixed rumen bacteria was studied. The activities of carboxymethylcellulase and xylanase were stimulated, and those of alpha-amylase, protease and urease were inhibited by the addition of neem cake extract to the reaction mixture. The stimulation and inhibition became more intense with increasing concentration of extract. The stimulation and inhibition became more intense with increasing concentration of extract. The hot water extract was more effective than cold water extract in stimulation of carboxymethylcellulase and xylanase activities, but alpha-amylase was inhibited equally by both the extracts.

9203-1472 Agrawal, R., Mohanty, B., Singh, N.S., Patwardhan, M.V.* (Area of Fruits and Vegetable Technology, Central Food Technological Research Institute, Mysore 570 013, Karanataka, India) **Parameters affecting allicin formation as a secondary metabolite by static cultures of Allium sativum.** *Journal of the Science of Food and Agriculture*, v. 57(2): p. 155-162, 1991 (15 ref, Eng).

Garlic (*A.sativum*) bulb explants produced undifferentiated white globular callus when grown on MS medium having 2,4-dichlorophenoxy-acetic acid (2,4-D) and Kinetin (Kn). Such callus when grown on medium having indole-3-yl-acetic acid (IAA) and/or Kn developed into the differentiating callus which had comparatively more allicin than that of undifferentiated callus. The effect of sucrose, NH4+/NO3- ratios and hormone concentrations on growth and allicin development in the callus was investigated. There was a significant increase in allicin development in callus when grown for up to 4 weeks on medium (a) having sucrose at 3 percent and 5 percent levels; (b) having NH4+ and NO3- ratios at 2:1 and 1;1; and (c) with Kn alone at a concentration of 0.5 mg litre-1, which produced a tenfold increase in allicin content.

9203-1473 Aimi, N., Uchida, N., Ohya, N. , Hosokawa, H., Takayama, H., Sakai, S. , Mendonza, L.A., Polz, L., Stockigt, J.(Faculty of Pharmaceutical Sciences, Chiba University, 1-33 Yayoi-cho, Chiba 260, Japan) **Novel indole alkaloids from cell suspension cultures of Aspidosperma quebracho blanco Schlecht.** *Tetrahedron Letters*, v. 32(37): p. 4949-4952, 1991 (9 ref, Eng).

Two novel monoterpenoid indole alkaloids, aspidochibine and 3-oxo-14,15-dehydrorhazinilam, were isolated from cell suspension cultures of *A.quebracho blanco*. The structure of these alkaloids was elucidated by spectroscopic methods. IARI, New Delhi.

9203-1474 Bagatto, G., Shorthouse, J.D.(Department of Biology, Laurenliau University, Sudbury, Ont., Canada P3E 2C6) **Accumulation of copper and nickel in plant tissues and an insect gall of lowbush blueberry, Vaccinium angustifolium near an ore smelter at Sudbury, Ontario, Canada.** *Canadian Journal of Botany*, v. 69(7): p. 1483-1490 , 1991 (55 ref, Eng).

Concentration of copper and nickel in root, stem and leaf tissue declined logarithmically with increasing distance from the smelter The pattern of accumulation in the decreasing order was root, stem, leaf, berry . The highest concentrations of copper and nickel were found in the galls, indicating that gall tissues act as a strong physiological sink for micronutrients and redirect from the host plant.

9203-1475 Bapat, V.A., Rao, P.S.(Plant Biotechnology Section, Bhabha Atomic Research Centre, Trombay, Bombay, Maharashtra, India) **Biotechnological approaches for sandalwood (Santalum album L.) micropropagation.** *Indian Forester*, v. 118(1): p. 48-54, 1992 (5 ref, Eng).

Regeneration of plantlets from somatic embryos differentiated from callus tissues originating from hypocotyl, stem and protoplasts cultures has been reported. Regeneration of plantlets from synthetic seed prepared by encapsulating somatic embryos in a proper matrix has also been discussed. Viable plantlets were recovered from somatic embryos grown in a bioreactor.

9203-1476 Bhandal, I.S., Paxton, J.D.*(Department of Plant Pathology, University of Illinois, Urbana, Illinois 61801, USA) **Phytoalexin biosynthesis induced by the fungal glucan polytran L in soybean, pea and sweet pepper tissues.** *Journal of Agricultural and Food Chemistry*, v. 39(12):.p. 2156-2157, 1991 (14 ref, Eng).

Methods for convenient mass elicitation of phytoalexin accumulation in tissues of soybean, pea and sweet pepper were developed. Polytran L, a commercially produced glucan of fungal origin, was employed as the elicitor at 0.25 percent (w/v). Glyceollin was induced optimally in 5-day-old soybean seedlings, whereas pisatin and capsidiol were induced in split peas and fully developed, unripe fruits of sweet pepper, respectively.

9203-1477 Bonkens Obasi, N.B.(Department of Pharmacognosy, School of Pharmacy, College of Medical Sciences, University of Benin, Benin City, Nigeria) **Analysis of the testaless seeds of Chrysophyllum albidum: nutritional aspects.** *Journal of the Science of Food and Agriculture*, 56(3): p. 345-349, 1991 (14 ref, Eng).

The testaless seeds of *C.albidum* from Nigeria were analysed and found to contain saponins with a foaming index d, 71 gka-1 crude fibre, 109 gkg-1 total ash, 316 g kg-1 carbohydrates, 364 g kg-1 proteins and 52 g kg-1 fixed oil on dry weight basis. They were also found to have appreciable amounts of K, Ca, P and Mg. Further analysis of the carbohydrates showed the presence of starch and the reducing sugars arabinose, galactose, glucose and mannose. The profile of amino acids showed the seeds to be rich in the essential amino acids lysine, threonine, leucine, isoleucine and phenylalanine. The fatty acids of fixed oil include 16.3 percent palmitic acid, 5.9 percent stearic acid, 41.3 percent oleic acid, 30.9 percent linoleic acid and 1.6 percent arachidic acid.

9203-1478 Borghi, D., Baumer, L., Ballabio, M., Arlandini, E., Perellino, N.C., Minghetti, A., Vincieri, F.F.(R/D Analytical Chemistry, Farmitalia C. Erba, Erbamont Group, via dei Gracchi 35, 20146 Milano, Italy) **Structure elucidation of helioscopinolides D and E from Euphorbia calyptrata cell cultures.** *Journal of Natural Products*, v. 54(6): p. 1503-1508 , 1991 (7 ref, Eng).

Two novel diterpene lactones belonging to the group of helio-scopinolides, have been isolated, together with the already known helioscopinolides C and A, from suspension cultures of*E.calyptrata*, a poisonous plant growing in the Sahara desert. All compounds have been extensively characterized by MS, 1H NMR and 13C NMR (COSY, NOESY, and HETCOR).

9203-1479 Brisson, L., Charest, P.M.*, De Luca, V., Ibrahim, R.K. (Department de Phytologie, FSAA, Universite Laval, Ste-Foy, Quebec, Canada G1K 7P4) **Immunocytochemical localization of vindoline in mesophyll protoplasts of Catharanthus roseus.** *Phytochemistry*, v. 31(2): p. 465-470, 1992 (35 ref, Eng).

In order to study the intracellular localization of vindoline, antivindoline (in the leaves of *C.roseus* antisera were raised in rabbits and used with in situ immunoflurescence and immunogold labelling techniques. Labelling of isolated protoplast preparations showed an intense green fluorescence in the protoplast vacuoles, indicative of the location of vindoline labelled with fluorescein. Use of cryotechniques coupled with immunogold labelling revealed that the label of vindoline was present in small vesicles and the cytoplasmic area bordering the plasmalemma. A substantial amount of label was also observed in the central vacuole and, to a much lesser extent, in the chloroplasts.

9203-1480 Budincevic, M., Vrbaski, Z.(Institute of Chemistry, Faculty of Sciences, Novi Sad, Yugoslavia) **Antioxidant activity of ethanolic extract of the osage orange fruit in linoleic acid emulsion.** *Herba Hungarica*, v. 30(3): p. 72-80, 1991 (11 ref, Eng).

Antioxidant activity of the ethanol extract of unripe *Maclura aurantiaca* fruits is reported. The extract also exhibited activity in emulsion, which was intestified by the addition of citric acid.

9203-1481 Calvarano, M., Houjio, W.U. , Calvarano, I., Crescimanno, F.G., Germana, M.A., Chironi, G.(Stazione Sperimentale per l'Industria delle Essenze e dei Derivati agrumari, 39127 Reggio Calabria, Italy) **Research on morphological and biochemical fruit characteristics of 12 Citrus aurantium L. clones.** *Essenze Derivati Agrumari*, v. 61(2): p. 89-102, 1991 (26 ref, Eng).

Morphological characteristics of 12 clones of citrus fruits grown in Italy are presented along with flavonoid constituents in juice and peel, typical components of the juice and essential oil.

9203-1482 Chhabicz, J., Paszkiewicz-Gadek, A. , Grochowska, K., Galasinksi, W.(Department of General Organic Chemistry, Institute of Chemistry, Medical Academy in Bialystok, Poland) **Substances of plant origin with anticipated cyto-and oncostatic activity inhibit protein bisynthesis.** *Herba Hungarica*, v. 30(3): 61-71, 1991 (12 ref, Eng).

Caffeic acid isolated from *Melissa officinalis* and alkaloids from Ipecacuanhae were found to be potential inhibitors of protein biosynthesis *in vitro*. Caffeic acid has been reported to inhibit the incorporation of labeled aminoacids into proteins probably by inactivation of elongation factor EF-1, while for the Ipecacuanhae alkaloids, the target site were found to be ribosomes.

9203-1483 Conn, E.E.(Department of Biochemistry and Biophysics, University of California, Davis, California 95616, USA) **The metabolism of a natural product: Lessons learned from cyanogenic glycosides.** *Planta Medica (Supplement)*, v. 57(7): p. S1-S9, 1991 (46 ref, Eng).

The biosynthesis, compartmentation, and catabolism of cyanogenic glycosides are discussed for the cases of some selected examples. These include amygdalin (occurring widely in the Rosaceae), the aliphatic cyanogens linamarin and lotaustralin (widely occurring, especially in the Leguminosae), and dhurrin together with its epimer taxiphyllin (occurring in the genus Sorghum). Mechanistic studies including tracer experiments are described in detail. Unusual and even unique metabolites of amino acids have been identified as intermediates in these biosynthetic processes.

9203-1484 Croteau, R.(Institute of Biological Chemistry, Washington State University, Pullman, Washington 99164-6340, USA) **Metabolism of monoterpenes in mint (Mentha) species.** *Planta Medica(Supplement)*, v. 57(7): p. S10-S14, 1991 (38 ref, Eng).

Commercial mint (*Mentha*) species produce either C3-oxygenated or C6-oxygenated p-menthane monoterpene as the major essential oil components. The biosynthetic origin of both of these monoterpene families from the common precursor (-)-limonenen is described. The metabolic turnover of monoterpenes occurs during late stages of plant development, and the pathway for the transport and catabolism of (-)-menthone in peppermint is reviewed as a model for this general process. The developmental regulation of monoterpene metabolism is briefly outlined.

9203-1485 Damtoft, S., Jensen, S.R., Nielsen, B.J.(Department of Organic Chemistry, The Technical University of Denmark, Building 201, DK 2800 Lyngby, Denmark) **Biosynthesis of iridoid glucosides in Lamium album.** *Phytochemistry*, v. 31(1): p. 135-137, 1992 (18 ref, Eng).

Feeding experiments with deuterium labelled precursors showed that caryoptoside, lamalbid and the secoiridoid alboside B are derived from 8-epi-deoxyloganic acid in *L.album* and that caryoptoside is an intermediate in the biosynthesis of lamalbid and alboside B. The taxonomic consequences of these results are discussed.

9203-1486 Duskova, J., Opatrny, Z., Sovova, M., Opatrna, J. (Department of Pharmaceutical Botany and Ecology, Faculty of Pharmacy, Charles University, Hradec. Kralove, Czechoslovakia) **Coronilla varia in vitro. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 111, 1989 (Eng).

Optimum conditions for *in vitro* cultivation of *C.varia* have been investigated. Tissue cultures contained cardiac glycosides, qualitatively identical with those of the extract from the leaves upto 7th passage. Callus contained mainly deglucohyrcanoside and traces of hyrcanoside, whereas in the intact plants it is the reverse. Ionizing radiations 2.5 and 5 Gy markedly stimulated the formation of somatic embryo without affecting the qualitative composition of the metabolities.

9203-1487 Fukui, H., Tani, M., Tabata, M.(Faculty of Pharmaceutical Sciences, Kyoto University, Yoshida, Kyoto 606, Japan) **An unusual metabolite, dihydroechinofuran, released from cultured cells of Lithospermum erythrorhizon.** *Phytochemistry*, v. 31(2): p. 519-521, 1992 (16 ref, Eng).

L.erythrorhizon cell suspension cultures in a growth medium produced no shikonin but an unusual metabolite, dihydroechinofuran, which is thought to be derived from geranylhydroquinone, a key intermediate in the biosynthesis of shikonin. This new compound was mostly released from the cells into the medium.

9203-1488 Gopinath, G., Narayana Gowda, J.V. , Nagegowda, V. (Division of Horticultural Sciences, University of Agricultural Sciences, GKVK, Bangalore 560065, Karnataka, India) **Effect of maleic hydrazide and cycocel on flowering and seasonal pattern of yield on Jasminum sambac Ait.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.51*, Oct 21-23, 1991 (Eng).

Foliar application of cycocel and maleic hydrazide at 1000 and 2000 ppm increased the flower yield and shifted peak flowering season to April/May and June. Cycocel treated plants flowered early, with longer duration of flowering and increase in number and flower yield per plant and similar trend was exhibited by maleic hydrazide treated plants. Increase in flower yield and number of flower per plant due to cycocel is 120.51 and 102.27 per cent respectively over untreated plants. (Abstr. No. B-06).

9203-1489 Grewal, S., Ahuja, A., Koul, S. , Sambyal, M.(Regional Research Laboratory, Jammu-Tawi 180001, J&K, India) **Application of tissue culture technique to some essential oil bearing plants.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.90*, Oct 21-23, 1991 (Eng).

Attempts were made to work out the protocols for propagation of selected genotypes of some essential oil bearing plants through tissue culture. High frequency plant regeneration by direct organogenesis and somatic callus in *Eucalyptus citriodora, Ocimum gratissimum, O.carnosum, O.viride* hybrid of *Ocimum O.viridexO.gratissimum, O.basilicumxO.kilimandscharicum* and *Matricaria chamomilla* has been achieved. From the studies conducted on these plants, significance of several parameters such as plant part, season of collection and age of explant donor and cultural conditions viz. medium constituents, supporting system and illumination requirement for achieving high frequency plant regeneration has been identified. (Abstr. No. BT-O6).

9203-1490 Gritsanapan, W., Griffin, W.J.*(Department of Pharmacy, University of Queensland, Queensland, Australia 4072) **Alkaloids and metabolism in a Duboisia hybrid.** *Phytochemistry*, v. 31(2): p. 471-477, 18 ref (Eng).

A *Duboisia* hybrid contained scopolamine, 6-hydroxyhyoscyamine and hyoscyamine as major alkaloids and similar minor alkaloids as the parent species, *D.leichhardtii* and *D.myoporoides*. Unlike *D.myoporoides*, there was almost complete absence of pyridine bases. Tritiated scopolamine was infiltrated into a 2-year-old, field grown tree via a wick method. The scopolamine administered was metabolised to aposcopolamine. Hyoscyamine, 6-hydroxyhyoscyamine and other minor *Duboisia* alkaloids had specific activities that were too small for them to be direct metabolities of scopolamine. Activity was located in acidic fractions that were shown to contain aromatic protons and water soluble basic fractions and are presumed to be responsible for the activity of these other alkaloids. The metabolic process occurred within the bark; alkaloids already accumulated appeared to be removed from the metabolic process.

9203-1491 Inamori, Y., Nishiguchi, K., Matsuo, N., Tsujibo, H., Baba, K., Ishida, N.(Osaka University of Pharmaceutical Sciences, Kawai, Matsubara-shi, Osaka 580, Japan) **Phytogrowth-inhibitory activities of tropolone and hinokitiol.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2378-2381, 1991 (20 ref, Eng).

Tropolone (I) and hinokitiol (II isolated from the wood of *Chamaecyparis taiwanensis*) at concentrations of 50 ppm showed strong inhibitory activity on the growth of all plants examined. Compounds I and II completely inhibited the germination of the seeds of some plants at the same concentration. The phytogrowth-inhibitory activities of both compounds were higher than that of sodium 2,4-dichlorophenoxyacetate (2,4-D), which was used as a standard. Both compounds inhibited the growth of some plants even at a concentration as low as 10 ppm. On the other hand, unlike 2,4-D, I and II stimulated the growth of all plants at the low concentration of 1 ppm. At 7d after treatment with I and II, the amount of chlorophyll in leaves of *Brassica campestris* ssp. *rapa* treated with both compounds was greatly decreased as compared with the control group.

9203-1492 Ishikawa, H., Kitahata, S.*, Ohtani, K., Tanaka, O. (Osaka Municipal Technical Research Institute, 1-6-50 Morinomiya, Jyoto-ku, Osaka 536, Japan) **Transfructosylation of rebaudioside a (a sweet glycoside of Stevia leaves) with Microbacterium beta-fructofuranosidase.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2043-2045, 1991 (Eng).

It was found that a beta-fructofuranosidase produced by Microbacterium spp. H-1 has potent trans-beta-fructofuranosylation activity from sucrose(donor_). By means of this enzyme system, rebaudioside A(RA), the second major sweet steviol glycoside of the leaves of *S.rebaudiana* was subject to transfructosylation, affording a mono-beta-fructofuranosylated product (RA-F) in a high yield. the structure of RA-F was elucidated as beta-D-fructofuranosyl-(2 to 6)-beta-D-glucopyranosyl ester of steviol-13-O-{beta-D-glucopyransoyl(1 to 2)-{beta-D-glucopyranosyl-(1 to 3)}-beta-D-glucopyranoside. Some improvement in the quality of sweetness was observed for RA-F.

9203-1493 Jacob, S., Gowda, J.V.N., Huddar, A.G.(Division of Horticulture, University of Agricultural Sciences, GKVK, Bangalore 560065, Karnataka, India) **Effect of Cycocel and Maleic hydrazide on growth and flowering of tuberose (Polianthes tuberosa Linn.) cv. Double'.** *Indian Perfumer*, v. 35(3): p. 137-139, 1991 (8 ref, Eng).

Experiment with three levels each of 1000, 1500 and 2000 ppm of Cycocel (CCC) and Maleic hydrazide (MH) reveals that foliar application of CCC and MH showed significant variation in plant height. CCC at 1500 ppm resulted in shorter plants, lower levels of CCC and MH (1000 ppm) increased the number of leaves per plant. CCC delayed flowering and resulted in more number of spikes per plant, number of flowers per spike increased with CCC 1500 ppm. Duration of flowering was maximum with MH 2000 pm. MH at 2000 ppm and CCC at 1500 ppm were effective in influencing quality parameters.

9203-1494 Jayavardhanan, K.K., Panikkar, K.R.(Amala Cancer Research Centre, Amala Nagar, P O Trichur 680 553, TN, India) **Distribution of lectin activity in the seeds and vegetative tissue of Vateria indica L.** *Indian Journal of Plant Physiology*, v. 34(1): p. 54-57 , 1991 (11 ref, Eng).

The lectin activity was studied in different organs of *V.indica* plant and was found to be distributed in leaf, root, stem and seed. The hemagglutinating activity of all the tissues was stable upto 60-70 degree C. The seed lectin was different from the vegetative tissue lectins in its hemagglutinating efficiency and sugar specificities which indicate the presence of two types of lectins in this plant. NSL, New Delhi.

9203-1495 Kamal, R., Mangal, M.(Department of Botany, University of Rajasthan, Jaipur 302 004, Rajasthan, India) *In vivo* and *in vitro* production of histamine from Indigofera tinctoria. *Indian Drugs*, v. 29(4): p. 179-181, 1992 (18 ref, Eng).

In callus cultures the histamine content was maximum (5.0 mg/g d w) in eight weeks old tissues. There was a gradual increase in histamine content in calli harvested at 2,4,6 and 8 weeks, after that it decreased (3.9 mg/g d w) in 10 weeks old cultures.

9203-1496 Keshavachandran, R., Md. Abdulkhader(College of Horticulture, Tamil Nadu Agricultural University, Coimbatore 641 003, Tamil Nadu, India) **Plant regeneration from inflorescence culture of vetiver (Vetiveria zizanioides) L..** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.89*, Oct 21-23, 1991 (Eng).

Embryogenic callus was induced from immature inflorescence segments of *V.zizanioides* on Murashige and Skoog's medium supplemented with 2,4-dichlorophenoxyacetic acid (3.5 mg/l) and kinetin (0.5-1 mg/l). The callus on subculture to media with no hormones or low levels of 2,4,D(1 mg/l) developed a large number of embryoids. The embryoids developed into plantlets on the basal medium or on transfer to MS medium with low levels of auxins. The regenerated plantlets developed a strong root system on MS medium supplemented with NAA (1 mg/l). (Abstr. No. BT-O5).

9203-1497 Khan, M.B., Harborne, J.B.(School of Plant Science, University of Reading, PO Box 221, Reading RG6 2AS, UK) **Potassium deficiency increases tropane alkaloid synthesis in Atropa acuminata via arginine and ornithine decarboxylase levels.** *Phytochemistry*, v. 30(11): p. 3559-3563, 1991 (19 ref, Eng).

Total biomass, percentage of tropane alkaloid, total alkaloid per plant, ornithine decarboxylase activity (ODC), arginine decarboxylase (ADC) activity and putrescine levels were determined separately in roots, stems and leaves of *A.acuminata* fed with nutrient solution containing varying concentrations of potassium ion. With five-fold more potassium than the control, the total biomass increased, the percentage of alkaloids decreased and there was no effect on total alkaloid produced per plant. With five-fold reduction in potassium compared to the control, the total biomass decreased, the percentage of alkaloids increased while there was no significant effect on the total alkaloid produced per plant. With 100-fold less potassium than the control, the total biomass decreased while both the percentage and total alkaloid produced per plant increased.

9203-1498 Lee, H.S., Lee, K.W., Yang, S.G. , Liu, J.R.(Plant Cell Biology Laboratory, Genetic Engineering Research Institute, Korea Insitute of Science & Technology, PO Box 17, Taedok Science Town, Taejon, 305-606 Korea) **In vitro flowering of ginseng (Panax ginseng C.A. Meyer) zygotic embryos induced by growth regulators.** *Plant and Cell Physiology*, v. 32(7): p. 1111-1113 , 1991 (6 ref, Eng, Eng).

When zygotic embryos of *P.ginseng* were cultured on MS medium supplemented with all combinations of 6-benzyladenine (BA), GA3, and ABA of 5 micro M each, flower buds were induced on the medium with either BA, BA+GA3, or BA+GA3+ABA. In all cases, flower buds were formed on elongated axillary branches from the cotyledonary node, while the apices remained vegetative. IARI, New Delhi.

9203-1499 Maffei, M., Scannerini, S.(Department of Morphophysiology, University of Turin, Viale P A Mattioli, 25, 10125 Turin, Italy) **Seasonal variations in fatty acids from non-polar lipids of developing peppermint leaves.** *Phytochemistry*, v. 31(2): p. 479-484, 1992 (39 ref, Eng).

Fatty acids(FA) from free FA, diacylglycerols and triacydglycerols were analysed in *Mentha piperita* leaves before and during full bloom. The qualitative FA composition was dominated by palmitate(16:O), linoleate(18:2)and linolenate(18:3). Leaves of 10, 20, 40 and 60 mm in length were analysed. Leaves of 10 mm were found to possess the highest content of 16:0, 18:2 and 18:3 before and during full bloom. A decreasing trend in both total and unsaturated FA was observed with leaf development. The results were correlated with monoterpene metabolism and are discussed further.

9203-1500 Martin, R., Reichling, J.*(Institut fur Pharmazeutische Biologie der Universitat Heidelberg, Im Neuenheimer Feld 364, 6900 Heidelberg 1, Germany) **NIH-shift during biosynthesis of epoxy-pseudoisoeugenol-(2-methylbutyrate) in tissue cultures of Pimpinella anisum.** *Phytochemistry*, v. 31(2): p. 511-514, 1992 (13 ref, Eng).

. Pseudoisoeugenols are phenylpropanoids with a rare 2,5-dioxy-substitution pattern at the phenyl ring. Their biosynthetic pathway up to anethole appears to be identical to that of ordinary phenylpropanoids. The biosynthetic step leading from anethole (1-propenyl-4-methoxy benzene) to pseudoisoeugenol (1-propenyl-2-hydroxy-5-methoxy benzene) was examined using a tissue culture of *P.anisum* and presentation of 13C labelled precursors. It involves migration of the side chain during the introduction of the OH-2-group.

9203-1501 Matern, U.(Institut fur Biilogie II, Lehrstuhl fur Biochemie der Pflanzen, Universitat Freiburg, Schanzlestr.1, D-7800 Freiburg/Br, FRG) **Coumarins and other phenylpropanoid compounds in the defense response of plant cells.** *Planta Medica(Supplement)*, v. 57(7): p. S15-S20, 1991 (51 ref, Eng).

Cultured cells of the Apiaceae, e.g. *Petroselinum crispum* and *Ammi majus*, produce large quantities of coumarin phytoalexins upon treatment with fungal elicitors and concomitantly reinforce their cell walls by ferulic ester incorporation. In these reactions, the cells mimic the disease resistance response commonly expressed in plants following infection by phytopathogenic fungi. Both coumarins and ferulic esters are derived from the general phenylpropanoid pathway. The elicited Apiaceae cell cultures have therefore served as model systems for the investigation of the biosynthetic and regulatory mechanisms involved in phenylpropanoid accumulation. The results of these studies suggest an unconventional pathway for umbelliferone biosynthesis and demonstrate both the transcriptional and post-transcriptional control of a novel pathway to feruloyl-CoA.

9203-1502 Mathai, C.K., Sastry, Krishna, K.S.(Central Plantation Crops Research Institute, Vittal 574 243, South Kanara, Karnataka, India) **Light saturation studies in black pepper (Piper nigrum L.) varieties.** *Comparative Physiology and Ecology*, v. 16(4): p. 129-133 , 1991 (10 ref, Eng).

The traditionally shade grown varieties of pepper (*P.nigrum*) were grown under partial light stress conditions on line standards. They showed the capacity of light saturation between 138 to 2049 micro Em2-s1 of light intensities. A steady photosynthesizing pattern of the leaves in a stand upto 2049 micro E-2S-' or more light intensity throughout the day and round the year is a desirable character for better productivity. Cv. Panniyoor 1 was however found to possess the capacity to be steady between 138-2049 micro Em in-2S-1. NSL, New Delhi.

9203-1503 Merillon, J.M., Chenieux, J.C. , Rideau, M.*(Laboratoire de Biotechnologie Vegetale, Faculte de Pharmacie, 2 Bis, Boulevard Tonnelle, F-37042 Tours-Cedex, France) **Activities of NADPH-producing enzymes and alkaloid production in Catharanthus roseus cells.** *Biologia Plantarum (Praha)*, v. 33(3): p. 169-174 , 1991 (18 ref, Eng).

A 2,4-D dependent cell line, accumulating only traces of indole alkaloids under standard conditions of subculture, was grown in two different production media. Removal 2,4-D- from maintenance culture medium enhanced the production of ajmalicine and serpentine and increased the activities of the NADPH-producing enzymes: glucose 6-phosphate dehydrogenase, 6-phosphogluconate dehydrogenase, malic enzyme and cytosolic isocitrate dehydrogenase. Adding zeatin to a 2,4-D depleted medium further increased the alkaloid content but the activities of the NADPH-producing enzymes remained unchanged.

9203-1504 Mongeau, R., Yiu, S.H., Brassard, R.(Bureau of Nutritional Sciences, Banting Research Centre, Food Directorate, Health and Welfare Canada, Tunney's Pasture, Ottawa, Ontario K1A O12, Canada) **Chemical and fluorescence microscopic analysis of fiber degradation of oat, hard red spring wheat, and corn bran in rats.** *Journal of Agricultural and Food Chemistry*, v. 39(11): p. 1966-1971, 1991 (47 ref, Eng).

The degradation of dietary fiber from hard red spring(HRS) wheat, corn, and oat brans(respectively 25.7,18.4, or 22.7 percent in diets) was studied in rats after 28 weeks of feeding. In animals fed the oat bran diet, 76+-9 percent of neutral detergent fiber(NDF) was fermented. Although dietary fiber levels and compositions were similar in HRS wheat and corn bran diets, HRS wheat NDF showed greater fermentative degradation (particularly xylan) than corn NDF (31+-3 vs 7+- 4 percent) (P0.001). Dietary fiber degradation observed by fluorescence microscopy was negligible in corn bran, partial in HRS wheat aleurone layer, and extensive in oat aleurone layer, confirming NDF analysis. It is concluded that bran fiber fermentability cannot be predicted from its composition alone.

9203-1505 Nakajima, O., Akiyama, T. , Hakamatsuka, T., Shibuya, M. , Noguchi, H. , Ebizuka, Y., Sankawa, U.*(Faculty of Pharmaceutical Sciences, The University of Tokyo, 7-3-1, Hongo, Bynkyo-ku, Tokyo 113, Japan) **Isolation, sequence and bacterial expression of a cDNA for chalcone synthase from the cultured cells of Pueraria lobata.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1911-1913, 1991 (14 ref, Eng).

cDNA clones for chalcone synthase (CHS) of *P.lobata* cultured cells were isolated by screening the cDNA library using CHS cDNA of *Phaseolus vulgaris* as a probe. Analysis of nucleotide sequences of the cloned cDNA revealed a 1170-bp open reading frame that encoded a 390-amino acid polypeptide with an Mr of 43,000. The full-length cDNA was cloned into the expression vector pT7-7. CHS activity was found in the crude extracts of transformed E.coli after induction and two protein bands of ca. 43 and 34 kd were hybridized with anti-persley CHS antiserum.

9203-1506 Nandi, R.P., Chatterjee, S.K.(Research Laboratory, Mungpoo 734313, Darjeeling, WB, India) **Improvement of essential oil formation in Cymbopogon**

winterianus in relation to growth and developmental physiology of the plant. *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.53-54*, Oct 21-23, 1991 (Eng).

The patterns of essential oil formation in *C.winterianus* revealed an interesting course of its occurrence, maximum increase in the rate of essential oil synthesis taking place during vegetative phase; the trend of increase gradually declining during reproductive phase and decreasing during post-reproductive and senile phases of-development. It, however, became clear that the totalcontent of essential oil per unit laminar tissue, when examined separately during vegetative, reproductive, post-reproductive and senile phases, always apperared to be maximum during reproduction phase. Growth behaviour and essential oil formation during different phases has been discussed. (Abstr. No. B-08).

9203-1507 Naoshima, Y. , Akakabe, Y.(Department of Biochemistry, Faculty of Science, Okayama University of Science, 1-1 Ridai-cho, Okayama 700, Japan) **Biotransformation of aromatic ketones with cell cultures of carrot, tobacco and gardenia.** *Phytochemistry*, v. 30(11): p. 3595-3597, 1991 (13 ref, Eng).

Immobilized cells of *Daucus carota* enantioselectively transformed aromatic ketones such as acetophenone and propiophenone, into the corresponding (S)-alcohols with an optical purity of 89-99 percent ee in a chemical yield of 54-70 percent. Immobilized *Gardenia jasminoides* cells yielded the (R)-alcohols with a 63-91 percent ee.

9203-1508 Nishizawa, A., Honda, G., Tabata, M.(Faculty of Pharmaceutical Sciences, Kyoto University, Yoshida, Kyoto 606, Japan) **Genetic control of the enzymatic formation of cyclic monoterpenoids in Perilla frutescens.** *Phytochemistry*, v. 31(1): p. 139-142, 1992 (12 ref, Eng).

The activities of the two key enzymes involved in monoterpenoid biosynthesis, in various chemotypes of *P.frutescens* were examined to clarify the sites of action of two dominant genes, G and H, that are essential for the formation of cyclic monoterpenoids. GPP synthase activity was found in all chemotypes irrespective of the genotypes, but limonene synthase activity was found only in the PA chemotype (GGHH) that produces the cyclic monoterpenoid, perillaldehyde, as the main component of the essential oil. These results indicate that both genes, G and H, control separate enzymatic reactions in the cyclization of geranylpyrophosphate to yield limonene, a cyclic intermediate in the biosynthesis of perillaldehyde.

9203-1509 Pal, D., Gupta, S.K.(Department of Botany, D A V College, Muzaffarnagar 251 001, UP, India) **Nutrient status of N.oleander and U.indica as influenced by growth regulators.** *Advances in Plant Sciences*, v. 4(2): p. 359-365, 1991 (15 ref, Eng).

Nitrogen, phosphorus and potassium contents of *Nerium oleander* and *Urginea indica* were estimated under different growth regulators treatments. On the basis of present studies both concentrations of gibberellic acid (50 and 100 ppm) and lower concentration of 2,4-D (1 ppm) and TIBA (10 ppm) can be recommended for better nutrient status in *N.oleander* while higher concentrations of 2,4-D(10 ppm) and TIBA (10 and 100 ppm) were favourable for *U.indica*. GA3 also proved effective in enhancing the nutrient status of *U.indica*.

9203-1510 Paterson, V.J., MacRae, E.A., Young, H.(DSIR Fruit and Trees, Mt Albert Research Centre, Private bag, Auckland, New Zealand) **Relationships between sensory properties and chemical composition of kiwifruit (Actinidia deliciosa).** *Journal of Science of Food and Agriculture*, v. 57(2): p. 235-251, 1991 (23 ref, Eng).

The relative roles of volatile and non-volatile compounds and fruit firmness in the sensory attributes of ripe kiwifruit, *A. deliciosa* were investigated. As fruit firmness decreased the levelsof several volatile esters, pentan-3-one and ethylene production increased. The levels of C6 aldehydes, C6 alcohols and ethanol showed little or no change within this fruit firmness range. Ethyl esters were the major contributors to total volatiles in ripe, freshly havested fruit, but ethanol was the most abundant volatile in mature fruit that had been stored at 0 degree C prior to ripening. Ethyl butanoate was the most abundant ester in unstored fruit whereas ethyl acetate was generally the most abundant ester in stored fruit . Stored fruit from the later harvests had higher levels of alpha- and beta-pinene than fresh fruit or immature stored fruit. A high tangy/acid score correlated with firm fruit, low levels of major volatile esters, high levels of citrate and high soluble solids concentrations(SSC). A high score for sweetness correlated with soft fruit and high volatile ester levels. Tangy/acid was the sensory attribute best able to be predicted by objective measurements.

9203-1511 Purohit, S.D., Tak, K.(Department of Botany, College of Science, ML Sukhadia University, Udaipur, Rajasthan, India) **Interaction of auxins and cytokinins in callus induction and multiple shoot formation in Feronia limonia L..** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India*, Oct 21-23, 1991 (Eng).

Seeds of *F.limonia* were separated from mature fruits collected from field. Seedlings were raised on the nutrient agar in dark at 27+3degree C after sterilization with 0.1 percent mercuric chloride for 5 minutes and subsequent washing with sterile distilled water. Cotyledon, hypocotyl and root explants from seedlings were placed on Murashige and Skoog's medium containing 3/4 salts, 2,4-D 2.5 mg/l, kinetin 0.1 mg/l, BAP 0.5 mg/l and antioxidants (Polyvinyl Pyrillidon 50 mg/l, ascorbic acid 100 mg mg/l and citric acid 20 mg/l) in dark. Callus induction was observed after 5-6 days of inoculation of explants. Initially the growth of callus was slow but on subsequent subculturing of the callus on the same medium the growth was faster. To get better elongated shoot, highly reduced concentrations of auxins were used in comparison to cytokinins. (Abstr. No. BT-O4).

9203-1512 Ram, G., Kaul, B.L.(Regional Research Laboratory, Jammu Tawi-180 001, JK, India) **Biological effect of X-rays, ethyl methane sulphonate and sodium azide in Solanum khasianum Clarke.** *Indian Journal of Forestry*, v. 14(4): p. 275-281 , 1991 (31 ref, Eng).

Biological effects of X-rays, ethyl methane sulphonate (EMS) and sodium azide(SA) mutagens in the two cultivars of *S.khasianum* were investigated on various parameters such as seed germination, seedling survival, seedling growth, cytological abnomalities and pollen fertility. Treatments with X-rays and MES caused nearly 50 percent reduction in germination, a dose dependent decrease in seedling growth, pollen fertility and a linear increase in the frequency of abnormal cells, whereas, no appreciable effect was noticed following SA treatments. Of the three mutagens X-rays and EMS were found to be effective, X-rays being better of the two.

9203-1513 Reisman-Berman, O., Kigel, J. , Rubin, B.(Department of Agricultural Botany, Faculty of Agriculture, The Hebrew University of Jerusalem, Rehovot 76100, Israel) **Dormancy patterns in buried seeds of Datura ferox and D.stramonium.** *Canadian Journal of Botany*, v. 69(1): p. 173-179 , 1991 (26 ref, Fre, Eng).

Dormancy levels were evaluated by measuring the germination of exhumed and dry-stored seeds under 32:27 degree C (nondormant seeds) or 32:12 degree C (relativelty dormant seeds). Levels of relative or full dormancy did not change during 2 years of dry storage in either species. Seed burial at 20 cm accelerated after-ripening, and primary dormancy disappeared earlier than at 5 cm. However, burial depths greater than 10 cm prevented germination in situ. Cyclic seasonal changes in dormancy were found in buried seeds of *D.ferox* but not in *D.stramonium*. In *D.ferox*, dormancy was alleviated during the winter and germinability was maximal in early spring; the increase in dormancy was preceded by high late spring-summer temperatures. In *D.stramonium* most seeds near the soil surface germinated in the field in a brief flush in early winter, at temperatures under which *D.ferox* did not germinate.

9203-1514 Robins, R.J., Walton, N.J., Hamill, J.D., Parr, A.J., Rhodes, M.J.C.(Plant Biotechnology Group, Genetics and Microbiology Department, Institute of Food Research (Norwich Laboratory), Norwich Science Park, Colney, Norwich NR47UA, U K) **Strategies for the genetic manipulation of alkaloid-producing pathways in plants.** *PlantaMedica(Supplement)*, v. 57(7): p. S27-S35, 1991 (56 ref, Eng).

Recent studies have identified a number of key enzymes and at least some of the factors that regulate their levels of activity in the pathways forming indole alkaloids in *Catharanthus roseus*, tropane alkaloids in *Datura* and *Hyoscyamus* species, and nicotine in *Nicotiana* species. Such knowledge contributes the basis upon which it has become feasible to design a strategy by which the flux in these pathways may be enhanced at the genomic level. This review presents a summary of the state-of-the-art pertaining to these pathways and discusses the strategy to be adopted for a molecular approach to their manipulation, together with some of the pitfalls that may arise whentrying to alter their natural regulation.

9203-1515 Sakui, N., Kuroyanagi, M.* , Ishitobi, Y., Sato, M., Ueno, A.(School of Pharmaceutical Sciences, University of Shizuoka, 395 Yada, Shizuoka-shi, 422 Japan) **Biotransformation of sesquiterpenes by cultured cells of Curcuma zedoaria.** *Phytochemistry*, v. 31(1): p. 143-147, 1992 (18 ref, Eng).

The transformation of a 10-membered ring sesquiterpene, germacrone; into guaiane-type sesquiterpenes by suspension cultured cells of *C.zedoaria* was investigated. Germacrone was converted into several sesquiterpenes, some of which were isolated from the *Curcuma* spp. plants through, the key intermediate, (4R,5R)-germacrone 4,5-epoxide, and their structures were determined by spectral and chemical evidence. The configurations of some of the derivatives were opposite to those of the sesquiterpenes isolated from the *Curcuma* sp. plants, *C.aromatica, C.longa* and *C.zedoaria.* An eudesmane-type product was also isolated and its structure was determined. From the structure, the transformation of germacrone through the intermediate, (1S,10S)-germacrone 1,10-epoxide, was supposed and further confirmed by the transformation of germacrone 1,10-epoxide into the same product by acid treatment. The structures of two new products were also determined and their transformation mechanism through curcumenone and dihydrocurcumenone was deduced.

9203-1516 Shanthamma, C., Krishna, V.(Department of Studies in Botany, University of Mysore, Manasagangothri, Mysore 570 001, Karnataka, India) **In vitro studies on Jasminum sambac (Linn.) Ait..** *International Symposium* *on Newer Trends in Essent.Oils & Flavs, RRL Jammu, J&K, India. p.86*, Oct 21-23, 1991 (Eng).

J.sambac var. Grand duke of Tuscany ("The Arab Jasmine") is used as a cure for jaundice by tribals of Karnataka. Tissue culture methods have been applied to this plant with dual purpose of obtaining cell lines yielding better quality and quantity of volatile oil and also to evaluate the efficacy and active principles involved in curing jaundice. Various explants viz. stem, leaf, petal, calyx and entire flower parts were subjected to culture studies. MS medium supplemented with varying concentrations of NAA (1-2.5 mg/l) induced callus. MS+Kinetin or BAP (2-3 mg/l) + NAA (3 mg/l) enhanced differentiation of shoot primordia. Comparatively calyx explants responded better. (Abstr. No. BT-O3).

9203-1517 Shimomura, K., Kitazawa, T. , Okamura, N., Yagi, A. (Tsukuba Medicinal Plant Research Station, National Institute of Hygienic Sciences, 1 Hachimandai, Tsukuba, Ibaraki 305, Japan) **Tanshinone production in adventitious roots and regenerates of Salvia miltiorrhiza.** *Journal of Natural Products*, v. 54(6): p. 1583-1587 , 1991 (11 ref, Eng).

The production of the four major tanshinones in the root cultures under different culture conditions was simultaneously determined by HPLC. The roots grew rapidly when indole-3-acetic acid or 1-naphthaleneacetic acid in combination with or without benzyladenine was added to Gamborg B5 liquid or solid media. The highest production of tanshinones was obtained with the addition of indole-3-butyric acid to the medium. In Gamborg B5 liquid medium, over 80 mg/g dry wt of tanshinones (sixfold the amount produced in the roots of parent plant) were obtained from the root cultures. In addition, a method for rapid propagation of *S.miltiorrhiza* has been established. Plantlets micropropagated on Murashige and Skoog solid medium could be transferred to the field. The roots of the 6-month-old regenerates produced more tanshinones than the commercially available roots, which are usually from 3-4-year-old plants.

9203-1518 Shukla, K., Narain, J.P., Puri, P. , Gupta, A., Bijlani, R.L., Mahapatra, S.C. , Karmarker, M.G.(Department of Physiology and Endocrinology, AIIMS, New Delhi 110029, India) **Glycaemic response to maize, bajra and barley.** *Indian Journal of Physiology and Pharmacology*, v. 135(4): p. 249-254, 1991 (18 ref, Eng).

Postprandial glycaemic response to *Zea mays, Pennisetum typhoideum* and *Hordeum vulgare* was studied in 18 healthy volenteers and 14 patients having non insulin dependent diabetes mellitus (NIDDM). In response to maize none of the variables examined was significantly different as compared to white bread. Bajra was significantly lower than that to white bread in healthy subjects, but the two response was indistinguishable in NIDDM subjects. The insulinaemic responses to bajra and white bread were not significantly different either group of subjects. The glycaemic response to barley was significantly lower than that of white bread in both the groups. Barley with low glycaemic index 68.7 in healthy and 53.4 in NIDDM) and a high insulinaeminc index (105.2) in NIDDM subjects seems to mobilize insulin in NIDDM. This makes it suitable cereal for diabetes mellitus.

9203-1519 Singh, C., Pal, S., Lal, S. , Thappa, R.K., Kaul, B.L. (Regional Research Laboratory, Jammu Tawi 180001, J&K, India) **Gamma ray induced alterations of growth and oil composition in jamrosa.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.*, Oct 21-23, 1991 (Eng).

Plantations of jamrosa raised from vegetative slips exposed to different levels of gamma radiations were analysed in terms of growth, oil content and composition. There was no increase in variability in growth parameters which on the contrary showed a dose dependent decrease. The oil content did not change but oil samples from treated material showed interesting variation in composition. Monoterpene hydrocarbons, delta-3-carene, myrcene, limonene, cis-ocimene recorded increase in range of variation and mean values while methyl heptenone showed a reverse trend. A significant increase in a terpineol, citronellyl acetate and high boilers were noted in oil samples analysed from plantation raised from slips exposed to higher level of gamma radiation. From the plantations studied presently five plant types with total geraniol content ranging between 71-81 percent were isolated for further breeding of useful genotypes with lower piperitone content. (Abstr. No. B-14).

9203-1520 Song, Y.N., Shibuya, M., Ebizuka, Y., Sankawa, U.* (Faculty of Pharmaceutical Sciences, The University of Tokyo, 7-3-1, Hongo, Bunkyo-ku, Tokyo 113, Japan) **Identification of plant factors inducing virulence gene expression in Agrobacterium tumefaciens.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2347-2350, 1991 (17 ref, Eng).

In the natural gene-transfer system of *Agrobacterium tumefaciens*, the expression of virulence (vir) gene of Ti (tumor inducing) plasmid is essential for the subsequent transferred deoxyribonucleic acid (T-DNA) transfer from bacterium to plant cells. vir gene expression is induced by signal compounds from plants such as acetosyringone and alpha-hydroxyacetosyringone which were isolated from hairy root cultures of *N.tabacum*. In a search for intrinsic signal compounds in plants, acetosyringone and alphahydroxyacetoxysyringone were identified as the vir-inducing compounds of the hairy root cultures of *Atropa belladonna.* The signal compounds of seedlings of *Pisum sativum* were identified as sinapyl and coniferyl alcohols. The quantities of these vir-inducing compounds were significantly increased when plant tissues were wounded, though the degree of increase was markedly different in each plant.

9203-1521 Tabata, M.(Faculty of Pharmaceutical Sciences, Kyoto University, Yoshida, Kyoto 606, Japan) **Transport and secretion of natural products in plant cell cultures.** *Planta Medica (Supplement)*, v. 57(7): p. S21-S26 , 1991 (47 ref, Eng).

Using the example of berberine in cell cultures of *Thalictrum* and *Berberis* species, the transport and secretion of natural products in plant cell cultures is reviewed. Topics discussed are the subcellular localization of berberine biosynthesis, transport of berberine to vacuoles, extracellular release of berberine, mechanism of berberine secretion, uptake and transport of exogenous berberine, and the release of berberine by immobilized cells.

9203-1522 Talwar, K.K., Singh, I.P., Kalsi, P.S.(Department of Chemistry, Punjab Agricultural University, Ludhiana 141 004, Punjab, India) **A sesquiterpenoid with plant growth regulatory activity from Saussurea lappa.** *Phytochemistry*, v. 31(1): p. 336-338, 1992 (5 ref, Eng).

Saussureal, a sesquiterpenoid with a new type of modified eudesmane skeleton has been isolated from roots of *S.lappa.* In saussureal, ring A is five-membered and displays significant biological activity as a plant growth regulator. Its structure has been elucidated on the basis of spectral data and chemical correlation with alpha-santenolide.

9203-1523 Thakur, R.S., Akhila, A.(Central Institute of Medicinal and Aromatic Plants, Lucknow 226016, UP, India) **Biosynthetic studies on some isoprenoid compounds of perfumery and flavour values from the plants cultivated in CIMAP.** *International Symposium on Newer Trends in Essen.Oils & Flavs, held at RRL, Jammu, JK, India.* , p. 1, Oct 21-23, 1991 (Eng).

The biosynthetic studies on medicinal and aroma constituents conducted at CIMAP since 1985 have been reviewed. The important plants discussed were; ***Cymbopogon flexuosus, Mentha arvensis, Rosa damascena, Mentha*** **species,** ***Artemisia pallans, Vetiveria zizanioides, Zingiber officinale*** **and** ***Pogostemon cablin.*** (Abstr. No. SL-04).

9203-1524 Thappa, R.K., Agarwal, S.G., Kalia, N.K., Kapoor, R.K. (Essential Oil Laboratory, Regional Research Laboratory, Canal Road, Jammu Tawi 180001, J&K, India) **Tagetes minuta oil: Changes in chemical composition at various stages of flowering and fruiting.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, JK, India. p.42-43*, Oct 21-23, 1991 (Eng).

The detailed chemical analyses confirmed that the percentage and composition of the oil changes within a short span along with the maturity of the flowers. The oil percentage reaches a maximum (1.25 percent) at seed setting stage. The concentration of two major components viz. (Z)-B-ocimene (35.2 percent) and (Z) - and (E) ocimenones (26.2 percent) reaches its peak value at full bloom while the concentration of these components is at a minimum value of 16.23 and 8.16 percent respectively at the onset of flower buds. Thus *Tagetes* oils of desired composition can be obtained by harvesting the crop at particular stage of growth. (Abstr. No. C-19).

9203-1525 Ueda, S., Iwahashi, Y., Tokuda, H.(Faculty of Pharmaceutical Sciences, Kyoto University, Sakyo-ku, Kyoto 606 01, Japan) **Production of anti-tumor-promoting iridoid glucosides in Genipa americana and its cell cultures.** *Journal of Natural Products*, v. 54(6): p. 1677-1680 , 1991 (17 ref, Eng).

The *G.americana* plant contains geniposide and geniposidic acid in the fruits and geniposidic acid in the leaves. On callus induction, the plant produces tarennoside, geniposidic acid, and gardenoside in high levels. The leaves of *G.americana* plants redifferentiated from the callus tissues produce geniposidic acid.

9203-1526 Watin-de-Pontfarcy, C., Bigot, C.(Laboratoire de Physiologie Vegetale Appliquee Ecole Nationale Superieur d'horticulture, 4, Rue Hardy, Route Postale 914, Versailles 78009, Cedex, France) (**Somatic embryogenesis and regeneration of plants from protoplasm of cell suspensions of celery** *Apium graveolens*). *Canadian Journal of Botany*, v.69(7):p.1583-1592, 1991 (Eng, Fre).

Protoplasts were isolated from cell suspensions of *A.graveolens* var. *rapaceum* initiated and subcultured on Gamborg medium with 2,4-D-and 6-benzylaminopurine. The microcalli were taken from 6 days old suspensions and put into an enzyme mixture of cellulose onazuka and peclotyase. Calli from protoplasts showed a variable capacity for somatic embryogenesis on Murashige and Skoog medium containing kinetin. Plantlet growth was observed more particularly on microcalli plating medium with growth regulators. A great number of plants with abnormal morphology was noted from calli cultivation medium with kinetin Na variation of normal ploidy (2n-2x=22) has been recorded among examined plants.

9203-1527 Wen-Bing, Y., Xiang-Dong, G. , Qiong-Hua, C.(Division of Biochemistry, China Pharmaceutical University, Nanjing 210009) **Biochemical study of Chinese rhubarb.** *Acta Biochimica et Biophysica Sinica*, v. 23(6): p. 482-487, 1991 (15 ref, Chi, Eng).

Two polysaccharides (RHP-A and RHP-B) from the Chinese herb *Rheum hotaoense* (RHP) were isolated and purified by Sephadex-G-100 and G-200 chromatography. RHP-A and RHP-B contained totally 92.4 percent (including 31.2 percent glucuronic acid) and 94.15 percent (including 32.4 percent glucuronic acid) sugar respectively. The components of these polysaccharides were identified by gas chromatography: glucose, fucose, arabinose, xylose, mannose and galactose were found to exist in the molar ratio of 1:2.35:10.36:1.88:11.08:1.92 in RHP-A and 1:1.57:2.13:2.11:1.48:2.52 in RHP-B. RHP-B strongly increased DNA synthesis and IL-2 production of mice lymphocytes with ConA stimulation while RHP-A showed only moderate effects.

9203-1528 Wichers, H.J.*, Haan, G.G.V.D. , Marsman, J.W., Harkes, M.P.(Netherlands Organization for Applied Scientific Research (TNO), Utrechtseweg 48, 3704 HE Zeist, The Netherlands) **Podophyllotoxin related lignans in plants and cell cultures of Linum flavum.** *Phytochemistry*, v. 30(11): p. 3601-3604, 1991 (12 ref, Eng).

The isolation and structure elucidation of 5'-demethoxy 5-methoxypodophyllotoxin and a number of structurally closely related minor compounds of MrS 370, 400 and 430, from in vitro cultured cells are reported. All compounds possess the same stereochemical configuration at C-1, C-2, C-3 and C-4, but differ in their hydroxylation and methoxylation patterns at C-5, C-4' and C-5'. Further, podophyllotoxin itself and matairesinol, a hypothetical biosynthetic precursor were detected. Data on the quantities of the previously isolated 5-methoxypodophyllotoxin and its 4-beta-D-glucoside, as well as of 5'-demethoxy 5-methoxypodophyllotoxin and related compounds present in plants and cell cultures is presented.

9203-1529 Wozniewski, T., Blaschek, W., Franz, G.(Department of Pharmacy, University of Regensburg, D-8400 Regensburg, Germany) **In vitro biosynthesis of a reserve glucomannan from Lilium testaceum.** *Phytochemistry*, v. 30(11): p. 3579-3583, 1991 (22 ref, Eng).

A particulate enzyme preparation, isolated from in vitro cultivated *L.testaceum* bulbs, was shown to catalyse the biosynthesis of a water-soluble beta-1,4-glucomannan with a Mr of 20 000. GDP{14C}mannose and GDP{14C}glucose were used as substrates for glucomannan biosynthesis. The incorporation of {14C}mannose and/or{14C}glucose into the polymer was significantly stimulated by low Mr glucomannan (3500). The isolated membrane preparation also exhibited GDP-mannose/-glucose-epimerase activity.

Pharmacognosy

9203-1530 Ahmed, V., Ammatu-N-Noor, Mishra, P.N.(National Botanical Research Institute, Lucknow 226001, UP, India) **Leucas aspera Linn.- a possible substitute for Zakhm-e-Hayat.** *Hamdard Medicus*, v. 34(3): p. 69-75, 1991 (11 ref, Eng).

Leucas aspera as a substitute for Unani medicine, Zakhm-e-Hayat, using *Kalanchoe* spp. alongwith *Tridex procumbens* is reported.

9203-1531 Awang, D.V.C., Dawson, B.A. , Kindack, D.G., Crompton, C.W. , Heptinstall, S.(Bureau of Drug Research, Health and Welfare Canada, Tunney's Pasture, Ottawa, Ontario K1A OL2, Canada) **Parthenolide content of feverfew (Tanacetum parthenium) assessed by HPLC and 1H-NMR spectroscopy.** *Journal of Natural Products*, v. 54(6): p. 1516-1521 , 1991 (22 ref, Eng).

Parthenolide, the main sesquiterpene lactone in some feverfew plants, has been quantified by a straightforward HPLC procedure. 1H-NMR analysis provides assay results in good general agreement and confirms parthenolide identity. Both authenticated *T.parthenium* and purported feverfew products on the UK and North American markets have been examined. A number of UK products and authentic feverfew from the UK satisfy the minimum level of 0.2 percent parthenolide proposed by Canada for commercial leaf products. However, no North American commercial product has yet been found to contain as much as 0.1 percent parthenolide. Leaves of a plant of *T.parthenium f. flosculosum* purchased and grown locally were found to have the highest level of parthenolide (1.27 percent) ever recorded in *T.parthenium* leaves, post-flowering roughly four times higher than pre-flowering, and higher than in its flowering tops.

9203-1532 Billore, K.V.(Regional Research Institute (Ay.), Madhovilas Palace, Amer Road, Jaipur 332 002, Rajasthan, India) **Note on the confused identity and nomenclature of Commiphora species.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 87-90, 1991 (4 ref, Eng, Hin).

An attempt has been made to clarify the confusion on the nomenclature and identity of guggulu, *Commiphora* *agallocha*. It is also indicated that *C.berryii* is a distinct species from *C.agallocha* restricted to South India.

9203-1533 Brindha, P., Sasikala, E., Pappa, M., Bhima Rao, R., Kundu, A.B.(Captain Srinivasa Murti Drug Research Institute for Ayurveda, Arumbakkam, Madras 106, TN, India) **Pharmacognositc studies on Coleus aromaticus Benth.(Indian Borage).** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2):p. 17-31, 1991 (10 ref, Eng, Hin).

The pharmacognostic features of *C.aromaticus* are presented. These include the exomorphology, histomorphology and physico chemical evaluation of the leaf and stem of this species used medicinally in the treatment of cough, cold, fever, tonsillitis and urinary diseases.

9203-1534 Chaudhari, B.G., Mehta, H.C. , Vaccharajani, Y.R.(Drug Standardisation Research Project CCRAS, Gujarat Ayurveda University, Jamnagar 361 008, Gujarat, India) **Studies on identification aspect of Vidhara beeja and its adulterants in Gujarat State.** *Bulletin of Medico-EthnobotanicalResearch*, v. 12(1-2): p. 40-50, 1991 (15 ref, Eng, Hin).

The correct identity of the drug has been posing a problem due to different writers of Indian Materia Medica and Medicinal plants indicating different botanical sources for this drug. Four different plants viz. *Argyreia speciosa, Ipomoea turpethum, I.petaloidea* and *I.pescarpae* have been mentioned yielding the drug. The seeds sold and used under this name in Gujarat crude drug market have been attempted to get them identified botanically along with the adulterants. The source plant was identified as *Argyreia speciosa*,(A.nerosa) and the adulterants the seeds of Thespesia populnea. The macroscopic, powder study, preliminary chemical standards, flurescence analysis of the drug have also been presented in this article.

9203-1535 Da Silver Paranhos, A.H.(Laboratorio de Farmacognosia da Faculdade de Farmacia da Universidade de Coimbra, Portugal) **Plant biotechnology: a new chapter of pharmacognosy.** *Boletin da Faculdade de Farmacia de Coimbra*, v. 14(2): p. 7-17, 1990 ((Recd. 1992); 23 ref, Por, Eng).

Application of *in vitro* plant cell cultures to plant biotechnology and future pharmacognosy has been reviewed.

9203-1536 Dwivedi, A.K., Chaudhry, M. , Kulshreshtha, D.K., Sarin, J.P.S.(Pharmaceutics Division, Central Drug Research Institute, Lucknow 226001, UP, India) **Standardization of Ksara Sutra.** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 85-92, 1991 (5 ref, Eng).

Standards of various constituents and Ksarasutra, an Ayurvedic technique used for the treatment of fistula have been laid down.

9203-1537 Gopalakrishnan, S., Parvathy, P. , Syed Ismail, T. (Department of Chemistry, Madurai Kamaraj University, P G Extension Centre, Palayamkottai 627 002, TN, India) **Pharmacognostic studies on the leaf of Ocimum basilicum Linn..** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 29-34, 1991 (14 ref, Eng).

The macroscopic and microscopic characters of the leaf and stem have been determined. Fluorescence analysis of the leaf powder in various solvents has been performed along with the quantitative values and ash values. The extractive values in different solvents have been determined. Thin layer chromatographic analysis of the different extracts has been performed and the Rf values measured in the solvent system. These data can be used as in identifying the amalgamated specimens of *Ocimum*.

9203-1538 Gromek, D., Kisiel, W., Stojakowska, A., Kohlmunzer, S. (Department of Phytochemistry, Institute of Pharmacology, Polish Academy of Sciences, Smetna 12, 31-343 Krakow, Poland) **Attempts of chemical standardizing of Chrysanthemum parthenium as a prospective antimigraine drug.** *Polish Journal of Pharmacology and Pharmacy*, v. 43(3): p. 213-217, 1991 (11 ref, Eng).

A quantitative analysis of biologically active sesquiterpene lactones in ethanol and aqueous extracts of *C.parthenium* and its form flosculosum has been carried out. The sesquiterpene lactone contents in the extracts were comparable, although the contents of ethanol extracts (Ca 0.5 percent) were higher than of aqueous ones (Ca 0.3 percent). Parthenolide was found to be the main constituent of the lactones. The applied IR and TLC/FID methods for quantitative determination of the total sesquiterpene lactones and parthenolide, respectively, may be used for chemical standardization of the raw material and its preparations.

9203-1539 Malik, V., Saxena, M.S.(Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110002) **Standards on essential oils in India.** *International Symposium on Newer Trends in Essential Oils and Flavours held at RRL Jammu, J&K,p.19*, Oct. 21-23, 1991 (Eng).

Bureau of Indian Standards is responsible for formulation of national standards for terminology; methods of sampling and test, codes of practice and specifications for raw materials and finished products for perfumery and their related applications. Thus far, 75 standards have been formulated. Abstr. No. SL-09.

9203-1540 Mehta, S.P., Viswanathan, M.V. , Singh, H.B. (Publications & Information Directorate, Hillside Raod, New Delhi 110 012, India) **On the identity of market sample of Brahmi in Delhi.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 83-86, 1991 (7 ref, Eng, Hin).

Morphological and taxonomical studies of the drug Brahmi proved that it contained mostly of 'Khubasi'*Malva rotundifolia* either in pure form or intermixed with 'Mandukparni'*Centella asiatica*. Characteristics of 'Khubasi', 'Mandukparni', and the actual 'Brahmi' viz. *Bacopa monnieri* are provided here for the benefit of the consumers.

9203-1541 Mossa, J.S., Abdul Hameed, K.U.(Department of Pharmacognosy, College of Pharmacy, PO Box 2457, Riyadh 11451, Saudi Arabia.) **Pharmacognostical and preliminary phytochemical investigations of Huernia saudi-arabica.** *Hamdard Medicus*, v. 34(4): p. 5-14, 1991 (6 ref, Eng).

Pharmacognostical characters and chemical constituents of *Huernia saudi-arabica* are reported.

9203-1542 Siddiqui, T.O., Ahmad, J., Mustafa, A.(Department of Botany, Faculty of Science, Jamia Hamdard, New Delhi 110062, India) **Pharmacognosy of the bark of Balanites aegyptiaca Del..** *Hamdard Medicus*, v. 34(4): p. 53-56, 1991 (6 ref, Eng).

Macro- and microscopic characters of *B.aegyptiaca* bark along with its physico-chemical standards, inorganic and organic analyses, determination of tannins and phenolic compounds and TLC behaviour are discussed. Pharmacognostical standards of the drug are presented to help in the identification of genuine sample.

9203-1543 Zhao, Z., Sashida, Y.*, Tang, X. , Tokumoto, H., Shimomura, H.(Institute of Chinese Materia Medica, China Academy of Traditional Chinese Medicine, No. 18 Beixincang Dongzhimen Nei, Beijing, China) **Pharmacognostical studies on the Magnolia bark (4). Morphological and histological studies on the bark of Magnolia rostrata W.W.Smith and M.grandiflora L..** *Shoyakugaku Zasshi*, v. 45(3): p. 190-198, 1991 (7 ref, Eng).

Detailed studies about the barks of *M.rostrata* and *M.grandiflora* in different ages and habitats were carried out. The results show that "the annual ring-like structure" can be found also in the barks of these species. The morphological and histological characterstics of these two species are described.

Clinical Studies

9203-1544 Bhasin, R.C.(Lady Hardinge Medical College, New Delhi 110 001, India) **A clinical trial of Koflet.** *Probe*, v. 31(1): p. 23-26, 1991 (Eng).

The new herbal cough remedy, Koflet (containing *Solanum xanthocarpum, Adhatoda vasica, Ocimum sanctum, Embelia ribes, Vitis vinifera, Glycyrrhiza glabra, Phyllanthus emblica* and *Balsamodendron mukul*) was tried on 50 patients with various respiratory disorders where cough was a predominant symptom. Twenty six were males and the rest females, their age ranging between 9-66 years. Excellent to good response was seen in 40(80 percent) patients. Six showed fair response and only the remaining 4 did not respond. Koflet facilitated easy expectoration of sputum due to its mucolytic action and smoothened the respiratory passages. No central depressant effect or drying action on the respiratory secretions was seen with Koflet.

9203-1545 Geetha, A., Amma, M.A., Nair, C.P.R., Lalitha, K. (Department of Obstetrics and Gynaecology, SAT Hospital and Medical College, Trivandrum 695001, Kerala, India) **Action of Pusyanuga curna in Pradara.** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 104-107, 1991 (2 ref, Eng).

Pusyanuga Curna, a composite Ayurvedic drug administered to 32 Pradara cases, showed subsidence of bleeding and absence of pain in all the cases within four days treatment. The effect of the drug in Vatadhika and Kaphadhika cases was 80 percent and 75 percent respectively. In 8 cases of Pittadhika Pradara, no relief was observed.

9203-1546 Gogte, R.B.(Department of Surgery, S T R C Hospital, Pune 411 011, Maharashtra, India) **Traumatic wound patient & Dhoopan Chikitsa.** *Deerghayu International*, v. 7(2): 2-13, 1991 (Eng, San).

Fifty-one patients of post-operative wounds were given fumigation of nimbapatra (*Azadirachta indica*), *Commiphora mukul, Brassica juncea, Acorus calamus* and common salt for 15 minutes daily for 10 days. It protected the wounds from infection and patients needed no pain killers or sleep inducing drugs. Patients having big epigastric incisions had no post-operative cough or dyspnoea and the room remained free from bugs and mosquitoes. Plants used as fumigant and their mode of action have also been discussed.

9203-1547 Hakim, M.H., Siddiqui, M.M.H., Khan, A.B.(Department of Moaiijat, AK Tibbia College, Aligarh Muslim University, Aligarh 202002, UP, India) **Anti-epileptic activity of Ustukhudus (Lavandula stoechas) in**

a case of secondary epilepsy (A case report). *Hamdard Medicus*, v. 34(3): p. 33-39, 1991 (8 ref, Eng).

Ustukhudus (*Lavandula stoechas*) of Unani System of Medicine, showed effective antiepileptic activity in a very rare case of secondary epilepsy due to sturge-Weber syndrome.

9203-1548 Hakim, M.H., Siddiqui, M.M.H.(Department of Moalijat, AK Tibbia College, Aligarh Muslim University, Aligarh 202002, UP, India) **Preliminary study of Ustukhudus (Lavandula stoechas, Linn.) in Iltihab-e-Khaishoom Muzmin (chronic sinusitis).** *Hamdard Medicus*, v. 34(3): p. 76-80, 1991 (11 ref, Eng).

Unani drug administered to 198 patients of chronic sinusitis, in the form of tablets (0.75 gm each), 2 tablets thre times daily for a period of three weeks continously, showed promising results.

9203-1549 Hayes, J.S., Lampart, R., Dreher, M.C., Morgan, S.L. (Miami Childrens' Hospital, Florida, USA. Princess Margaret Hospital, St. Thomas, Jamaica) **Five-year follow-up of rural Jamaican children whose mothers used marijuana during pregnancy.** *West Indian Medical Journal*, v. 40(3): p. 120-123 , 1991 (15, Eng).

Fifty-nine Jamaican children (from birth to age 5 years) whose mothers were taking Marijuana during pregnancy, were studied for various aspects of development. The tests were done with the Brazelton Neonatal Behavioural Assessment Scales and with the Mc Carthy Scales of Children's Abilities. The results show no significant differences in developmental testing outcomes between children of marijuana-using and non-using mothers.

9203-1550 Karnick, C.R.(Clinical and Experimental Ayurvedic Research Division, Wockhardt Limited, Aurangabad, Maharashtra, India) **Clinical observations on the effect of composite herbal drugs of Withania somnifera, Panax ginseng and Tribulus terrestris on psychomotor performance in healthy volunteers.** *Indian Medicine*, v. 4(1): p. 1-4, 1992 (9 ref, Eng).

Intake of one composite herbal drug capsule (500 mg) twice a day with milk showed enhancement of certain aspects of psychomoter performance. It showed increase in strength vitability process and endurance time. NSL, New Delhi.

9203-1551 KenMac, A.I., Chaghtai, S.A., Khan, S.S.("Maishi", PO Box 15, GPO, Bhopal, 462001, MP, India) **New horizons to improve the medicinal efficacy of Citrus limonum.** *Acta Clinica Scientia*, v. 2(1): p. 39-43, 1992 (2 ref, Eng).

Special preparation of *Citrus limonum* with ethyl alcohol was tried on a group of patients who volunteered themselves for the purpose. It was found that the preparation (1:99) on lime is more effective than other formulations and preparations. The preparation is based 30 the principle of potentiation and dynamisation. The particular ratio is also known as 30 c ptency in Homoeopathy. NSL, New Delhi.

9203-1552 Kulkarni, P.H.(Institute of Indian Medicine, 36, Kothrud, Pune 411 029, Maharashtra, India) **Clinical study of effect of sookshma(subtle) Triphala Guggulu (TG3X) in obesity.** *Deerghayu International*, v. 7(2): p. 17-21, 1991 (17 ref, Eng).

Oral administration (4 globules, t d s) of TG 3X (a potentiated drug prepared from mixture of *Terminalia chebula, T.belerica, Emblica officinalis, Piper longum* and *Commiphora mukul*) produced clinically significant weight reduction in 25 obese subjects. The drug did not affect the sympathetic nervous system or thyroid function. The duration of the treatment was 30-180 days.

9203-1553 Kulkarni, R.R., Patki, P.S., Jog, V.P., Gandage, S.G., Patwardhan, B.(Bryamjee Jeeyeebhoy Medica' College and Sassoon General Hospitals, University of Poona, Pune 411 007, Maharashtra, India) **Treatment of osteoarthritis with a herbomineral formulation: a double-blind, placebo-controlled, cross-over study.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 91-95 , 1991 (36 ref, Eng).

Treatment with a herbomineral formulation, Articulin-F (containing roots of *Withania somnifera*, stem of *Boswellia serrata*, rhizomes of *Curcuma longa* and a zinc complex) in 42 patients of osteoarthritis, produced a significant drop in severity of pain and disability score. NML, New Delhi.

9203-1554 Master, R.S., Rajguru, J.P.("Kamayani", The School for Mentally Handicapped, Shivaji Nagar, Pune, Maharashtra, India) **Pilot study of Mentat in mentally retarded children.** *Probe*, v. 31(1): p. 37-40, 1991 (Eng).

Eighteen children with mental retardation, aged between 3-10 years, were put on Mentat for 6 months. The dosage of Mentat was varied with the severity of the condition. A social worker and visiting psychiatrist rated the children once a week. Twelve children completed the trial as six dropped out. Global imporvement was observed in 9 (75 percent) of them. Maximum benefits were seen in hyperkinetic children in whom hyperactivity was reduced and their attention span and communication increased.

9203-1555 Nair, P.R., Vijayan, N.P. , Madhavikutty, P.(Indian Institute of Panchakarma, Cheruthuruthy, Kerala, India) **Clinical evaluation of Prabhanjanavimardanam taila and Sodhana therapy in the treatment of Gridhrasi (sciatica).** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 19-32, 1991 (5 ref, Eng).

Sixty eight patients treated with the taila containing about 32 plants and other ingredients showed maximum improvement. No side effect was noticed during the trial period.

9203-1556 Nair, P.R.C., Santhakumari, K. , Vijayan, N.P., Madhavikutty, P., Nair, C.N.B.(Indian Institute of Panchakarma, Cheruthuruthy, Shoranur, Trichur, Kerala, India) **Svitra (vitiligo) and its response to certain Ayurvedic medicines.** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 108-114, 1991 (6 ref, Eng).

Clinical efficacy of two sets of Ayurvedic medicines in a skin disease with white patches has been reported.

9203-1557 Namboodiri, P.K.N., Menon, T.V. , Prabhakaran, V.A., Vijayan, N.P., Pillai, N.G.K., Santhakumari, K.(Indian Institute of Panchakarma, Cheruthuruthy, Shoranur, KeralaIndia) **Comparative effect of J J taila-internal and external- in Paksavadha (Hemiplegia).** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 41-46, 1991 (7 ref, Eng).

Though oil prepared from *Nardostachys jatamansi* and *Celastrus paniculata* did not show any significant effect on hypertension, it showed encouraging results in hemiplegia. The role of internal Snehana (oleation therapy) in the therapeutic management of Paksavadha has also been emphasised.

9203-1558 Pandey, P.N., Padhi, M.M., Kishore, P.(Central Research Institute (Ayurveda), Unit 1, Bhubaneshwar 751009, Orissa, India) **An epidemiological survey on microfilaraemia in the village around Bhubaneshwar with therapeutic effect of Ayush-64.** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 33-40, 1991 (7 ref, Eng).

High incidence of microfilaraemia in six randomly surveyed villages, covering a population of 1396 and efficacy of a composite herbal drug have been reported. Ayush-64 has been reported to be reasonably effective as filaricidal drug.

9203-1559 Paranjpe, P.V., Bharucha, E.K. , Phadke, M.A., Phadke, M.V.(B J Medical College and Sassoon General Hospitals, Pune, Maharashtra, India) **Mentat in mental subnormality.** *Probe*, v. 31(1): p. 27-31, 1991 (1 ref, Eng).

The effect of Mentat was studied in 41 patients.The study lastedbetween 1-7 months. Twenty patients showed satisfactory clinical improvement. No untoward side-effects were observed except in 2 patients, one being a patient of chorea, who developed increase in movements and inco-ordination. Mentat was subsequently discontinued. In another patient who developed gynaecomastia and excessive salivation, the symptoms subsided on decreasing the dose of Mentat. Four out of 7 patients who developed hyperactivity following the use of phenobarbitone also showed improvement with Mentat.

9203-1560 Quadri, M.J.(Government Ayurvedic College Nanded, Maharashtra, India) **Idiopathic thrombo cytopenic purpurea-Ayurvedic aspect.** *Deerghayu International*, v. 8(1): p. 27-28, 1992 (Eng , San).

Adhatoda vasica leaf extract (20 ml orally twice a day), raisins (25g/day) and pure ghee (one teaspoonful per meal) were given to a patient having abnormal platelets counts and bleeding time. Platelet count returned to 1,55,000 per millimetre cube and bleeding time to 4 min. 51 sec (very near to normal values). No idiopathic thrombocytopenic purpurea could be noted in the patient after 6 months of therapy.

9203-1561 Roy, S.(H F C Hospital, P O Parbatpur, Namrup, Dist. Dibrugarh, Assam, India) **Clinical evaluation of Septilin in allergic rhinitis.** *Probe*, v. 31(2): p. 146-156, 1992 (6 ref, Eng).

The control group received only antiallergic drugs, whereas the trial group received both antiallergics and Septilin. Excellent response in the trial group was observed in 67 percent of cases, good in 28 percent and poor in 5 percent, as opposed to the control group responses of 11 percent, 23 percent and 66 percent respectively. Occasional dryness of the throat, which decreased with continued treatment, was the only "side-effect" noticed with Septilin. Hence, the use of Septilin along with antiallergic drugs in the treatment of allergic rhinitis is advocated.

9203-1562 Satdeve, S.G.(N D R I Karnal, Haryana, India) **Role of Diospyros embryopteris in irritating cough.** *Deerghayu International*, v. 8(1): p. 24-26, 1992 (Eng).

Thirty eight patients were administered the pulp of *D.embryopteris* fruits made palatable by addition of sugar. One teaspoonful for child and two spoonfuls for adult (twice or thrice a day) was the dose. Except one patient all got relief within 1-7 days. This confirms the folklore use of tendu leaves for treating irritating cough.

9203-1563 Shah, L.P.(K E M Hospital, and Seth G.S. Medical College, Parel, Bombay, Maharashtra, India) **Coping with old age with special reference to stress.** *Probe*, v. 31(1): p. 32-36, 1991 (Eng).

Various suggestions are being made to help the ageing population to cope with the problems encountered by them due to reduction in their psychological functions and deterioration in physical functions. Only when adaptation and adjustment techniques fail or are inadequate does the physician turn to pharmacotherapy. While the benzodiazepines are being used they have limitations because of dependence liability and side-effects. On the other hand Geriforte is a safe antistress, adaptogenic remedy. A double-blind study confirmed that Geriforte significantly helped relieve tension, intellectual difficulty, depressed mood, cardiovascular, respiratory and genitourinary symptoms.

9203-1564 Shah, L.P.(Department of Psychiatry, Seth G S Medical College and K E M Hospital, Bombay, Maharashtra, India) **An open clinical trial of Mentat in hyperkinetic children.** *Probe*, v. 31(1): p. 125-129, 1992 (10 ref, Eng).

Mentat was evaluated for its efficacy in twenty five children having hyperkinetic behavioural problems and aged between 4 to 14 years. The duration of illness ranged from 6 months to 3 years. Fifteen children were mentally retarded and amongst them ten had a history of brain damage. Mentat syrup, in the dose of 2 to 3 tsp. t.i.d. for 12 weeks, brought about "marked improvement" in 5 children as judged by both parents and doctors. No side-effects were noticed.

9203-1565 Shanmugasundaram, E.R.S., Sundram, P. , Srinivas, K., Shanmugusundaram, K.R.* , Shankaran, J.R.(Department of Biochemistry, Postgraduate Institute of Basic Medical Sciences, University of Madras, Madras 600 113, TN, India) **Double-blind cross-over study of modified Anna Pavala Sindhooram in patients with hyperlipidemia or ischemic heart disease.** *Journal of Ethnopharmacology*, v. 31: p. 85-99, 1991 (Eng).

HDL2 cholesterol and total HDL cholesterol were increased in 30 patients on Anna Pavala Sindhooram (APSm) therapy. Plasma cholesterol, LDL and VLDL cholesterol, triglycerides, phospholipids and free fatty acids were significantly reduced during this herbo-mineral drug therapy Withdrawl of the drug led to a slow increase in these lipids. No adverse side effects were noted. Some patients were able to reduce their daily doses of antihypertensive and vasodilator drugs during APSm therapy. APSm was prepared from *Corallium rubrum*, ferrous sulphate, *Hibiscus rosa-sinensis*, *Lawsonia alba* leaves and *Cyanodon dactylon* whole plant. NML, New Delhi.

9203-1566 Sharan, R., Khare, R.(Department of Paediatrics, S N Children's Hospital and M L N Medical College, Allahabad, UP, India) **A clinical trial of Mentat in children with behavioural problems.** *Probe*, v. 31(1): p. 12-22, 1991 (Eng).

Mentat an Ayurvedic drug comprising of plant drugs like (Jal-brahmi *(Bacopa monnieri)*, Brahmi *(Centella asiatica)*, Shatavari *(Asparagus racemosus)*, Bidarikand *(Ipomoea digitata)*, Vachh *(Acorus calamus)*, Ashwagandha (*Withania somnifera)*, Giloe (*Tinospora cordifolia*, Amla (*Emblica officinalis)* etc.) was tried on 105 children aged between 2-12 years, suffering from various behavioural problems. The effect of Mentat and changes in I.Q. were assessed in children in comparison to well matched controls. Sixty two children were followed up every month for 1-6 months. Marked improvement was seen in children with nocturnal enuresis, pica and breath-holding spells with mild improvement in school phobia, learning disability and speech defects. I.Q. scores showed significant improvement in those with nocturnal enuresis and speech defects. No toxic or untoward effects were seen druing Mentat therapy.

9203-1567 Sharma, S.K.(Department of Shalya Shalakaya, Faculty of Indian Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, UP, India) **Effect of Arogyawardhani on liver function after cholecystectomy in the case of cholecystolithiasis, choledocholithiasis and carcinoma gall bladder.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 19-28, 1991 (15 ref, Eng).

The effect of an Ayurvedic herbo-mineral compound drug-Arogywardhani in the dose of 1 gm b. d. after meals for 45 to 60 days was studied on 75 patients of various hepatobiliary disorder. The preoperative and postoperative liver function tests (L F T) were performed in the above patients. The data about L F T were recorded and the dearrangement of liver function noted. The effect of drug has been encouraging. It has significantly lowered the level of serum bilirubine, thymol turbidity, alkaline phosphatase and serum proteins. The use of Arogyawardhani is advocated in the patients of post-cholecystectomy syndrome and in dearrangement of liver functions.

9203-1568 Shukla, M.. **Clinical trial of Renon on rheumatoid arthritis.** *Journal of Scientific Research in Plants & Medicine* , v. 10(1-4): p. 53-55, 1986 ((Recd.1991); 2ref, Eng).

Renone tablets produced by Yogi Pharmacy (P.) Ltd. Hardwar was put to trial on 28 patients of rheumatoid arthritis. Only 27 patients took full course of 50 days treatment; patients of lower age group upto 45 years, showed early and better responses than older age groups. Out of 27 patients 18 were 100 percent cured, 6 were 75 percent cured, 1 was 50 percent cured and rest were negligibly cured. The drug did not show side effect.

9203-1569 Singh, R., Singh, R.P., Batliwala, P.G., Upadhyay, B.N., Tripathi, S.N.(Clinical Research Units, Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi 221005, UP, India) **Puskara- Guggulu an antianginal and hypolipidemic agent in coronary heart disease (CHD).** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 1-18, 1991 (35 ref, Eng).

One hundred fifty patients of coronary heart disease treated with Puskaraguggulu *Inula racemosa* powder for a period of 6 months at total dose level of 6-8 g per day in divided doses, exhibited most efficacious lipid lowering activity.

9203-1570 Singh, R.G., Usha, Kapoor, S.*(Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, UP, India) **Evaluation of antilithic properties of varun (Crataeva nurvala): An indigenous drug.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 35-39, 1991 (6 ref, Eng).

The antilithic effect of *C.nurvala* was examined in patients of calcium oxalate and calcium phosphate nephrolithiasis. It included 55 and 15 proved patients of calcium oxalate (group-A) and calcium phosphate stones (group-B) and 20 age/sex matched control in a span of 3.5 years. They were treated with the varun in the dose of 350 mg/kg of body weight per day for a period of 12 weeks in the form of freshly prepared decoction. They followed for a further period of 6 months. Symptomatic relief in terms of pain, dysuria and disappearance of urinary crystals were noticed in 70.90 percent and 63.63 percent in group A and 73.33 and 53.84 percent in group B respectively, at the end of the treatment. Radiological reduction in size was noticed in 33.33 percent and 35.72 percent of cases in group A and group B respectively.

9203-1571 Suru, P.P., Kulkarni, P.H.(Tilak Ayurveda Mahavidyalaya, Pune 11, Maharashtra, India) **Study of use of "Varunadi Kwath" in Mutrakruchchra.** *Deerghayu International*, v. 7(3): p. 2-4, 1991 (Eng).

Varunadi Kwath (a composite Ayurvedic drug containing *Crataeva religiosa, Tribulus terrestris, Zingiber officinale, Bergenia ligulata, Woodfordia fruticosa* and jaggery) was given in a dose of 20ml with water before lunch and dinner to 50 patients of urinary complaints. Excellent results were obtained in 64 percent of the patients and 26 percent showed moderate relief. Only 10 percent patients did not respond to the drug. The drug was effective in Vataja, Pittaja, Kaphaja and Ashmarija Mutrakruchchra. It is more effective in Ashmarija and Vataja types. No side or toxic effects were observed.

9203-1572 Verma, S.K., Bordia, A.(Department of Medicine and Indigenous Drugs Research Centre, RNT Medical College, Udaipur, Rajasthan, India) **Effect of an indigenous herbal compound Abana on fibrinolysis and platelet aggregation.** *Probe*, v. 31(1): p. 51-54, 1991 (14 ref, Eng).

The administration of four tablets of Abana enhanced fibrinolytic activity in patients of acute myocardial infractions and healthy individuals. However, the effect was statistically non significant. Long-term administration of Abana resulted in statistically significant increase in fibrinolytic activity and decrease in platelet aggregation in healthy adults but not in coronary artery disease patients. In view of its beneficial effect on fibrinolysis and platelet aggregation, without any untoward effects. Abana may prove to be a useful adjunct in the long term management of individuals predisposed to coronary artery diseases.

9203-1573 Verma, S.K., Bordia, A.(Department of Medicine and Indigenous Drug Research Centre, R N T Medical College, Udaipur, Rajasthan, India) **Effect of Abana (an indigenous herbal compound) in patients of mild and moderate hypertension.** *Probe*, v. 31(2): p. 177-179, 1992 (7 ref, Eng).

Ten patients were administered Abana for eight weeks, preceded and followed by placebo for two weeks. There was statistically significant reduction in systolic and diastolic blood pressures. The effect was evident during the second week of drug therapy and persisted as long as the drug was administered, without any side-effects. In view of its multifold beneficial effects on the cardiovascular system Abana can be considered an important addition to the various antihypertensive agents available.

9203-1574 wagh, S.Y.(Mandar, 31, Motibag Society, Satara Road, Pune 411 037, Maharashtra, India) **Clinical studies in viral hepatitis.** *Deerghayu International*, v. 4(4): p. 17-19, 1988 ((Recd. 1992), Eng).

Twenty-five cases of viral hepatitis were treated with Ayurvedic drugs Arogyawardhini (1 g t d s) and Kumariaswa (20ml b d) for two weeks. Serum bilirubin returned to normal in 9 cases and was less than 3 mg/dl in another 6 cases at the end of 2 weeks. 5 cases responded abnormally (4 cases were of hepatitis B) where serum bilirubin or S G P T increased substantially during first or second week of treatment.

Pharmacology & Toxicology

9203-1575 Addy, M.E., Addo, P., Nyarko, A.K.(Department of Biochemistry, University of Ghana, Legon, Ghana) **Indigofera arrecta prevents the development of hyperglycaemia in the db/db mouse.** *Phytotherapy Research*, v. 6(1): p. 25-28, 1992 (9 ref, Eng).

Genetically obsese diabetic and nondiabetic mice, and their lean littermates were used to evaluate an aqueous extract of *I.arrecta* which is used for the treatment of diabetes. Control animals were given water instead of the extract over a 90 day period, and measurement of blood glucose and body weight were done at approximately 30-day intervals. The development of hyperglycaemia associated with the diabetic mice over a time period was absent when the mice were on the extract. Blood glucose levels of littermates of both mutant strains, and the mild hyperglycaemia of the obese nondiabetic mice were not affected. The extract significantly lowered the body weight of both types of obese mutant mice but did not affect the body weight of the littermates.

9203-1576 Adesanya, S.A., Pais, M.*, Sevenet, T., Cosson, J.P. (Institut de Chimie des Substances Naturelles, CNRS, 91198 Gif-sur-Yvette, France) **Apotirucallane triterpenes from Dysoxylum roseum.** *Journal of Natural Products*, v. 54(6): p. 1588-1594 , 1991 (17 ref, Eng).

Chemical investigation of the biologically active compounds in *D.roseum* leaves has led to the isolation and characterization of five new apotirucallane-derived triterpenes, dysorones A-E and beta-sitosterol. The major compound, dysorone E, exhibits moderate cytotoxic activity *in vitro*against the growth of KB human buccal carcinoma cells (ED50 3.5 micro g/ml).

9203-1577 Akhtar, M.S., Iqbal, J.(Department of Physiology and Pharmacology, University of Agriculture, Faisalabad 38040, Pakistan) **Evaluation of the hypoglycaemic effect of Achyranthes aspera in normal and alloxan-diabetic rabbits.** *Journal of Ethnopharmacology*, v. 31: p. 49-57, 1991 (16 ref, Eng).

Oral administration of 2,3 and 4g/kg of *A.aspera*(whole plant) powder produced a significant dose-related hypoglycaemic effect in normal as well as diabetic rabbits. The water and methanol extracts also decreased blood glucose levels in normal and alloxan diabetic rabbits. A 7-day acute toxicity study in rabbits did not reveal any adverse or side effect at dosages upto 8g/kg orally. Zinc, copper, manganese, magnesium and calcium content of the plant have been found to be relatively high as compared to those found in common vegetables, fruits and other plant materials and may be responsible for the antidiabetic activity of the plant. NML, New Delhi.

9203-1578 Aleykutty, N.A., Srinivasan, K.K. , Rao, P.G., Keshavamurthy, K.R., Udupa, A.L.(College of Pharmaceutical Sciences, Manipal, Karnataka, India) **Study of the diuretic activity of Helicanthes elastica.** *Fitoterapia*, v. 62(5): p. 439-440, 1991 (4 ref, Eng).

Aqueous extract (AE) of *H.elastica* (HE) was tested for its diuretic activity and compared with standard drugs, hydrochlorthiazide (HCT) and frusemide (FS). Significant increase in the volume of urine and excretion of sodium, potassium and chloride was recorded when AE (4 g/kg, p.o., single dose) was administered to albino rats and compared with HCT (10 mg/kg) and FS (4 mg/kg).

9203-1579 Ali, M.B., Mohamed, A.H., Salih, W.M., Homeida, A.H. (Medicinal and Aromatic Herbs Research Institute, National Council for Research, P O Box 2404, Khartoum, Sudan) **Effect of an aqueous extract of Hibiscus sabdariffa calyces on the gastrointestinal tract.** *Fitoterapia*, v. 62(6): p. 475-479, 1991 (15 ref, Eng).

An aqueous extract (20 percent w/v) of *H.sabdariffa* calyces in small doses (0.2 ml/25 ml bath) stimulated isolated rabbit jejunum; however, larger doses (2.5 ml/bath) completely abolished the spontaneous activity. The stimulant effect was blocked by atropine but the inhibitory influence was refractory to autonomic blockers. The extract decreased the intestinal motility in intact rats as well as the oral-caecal transit time in dogs.

9203-1580 Ali, M.B., Salih, W.M., Mohamed, A.H., Homeida, A.M. (Medicinal and Aromatic Herbs Research Institute, National Council for Research, P O Box 2404, Khartoum, Sudan) **Investigation of the antispasmodic potential of Hibiscus sabdarifta calyces.** *Journal of Ethnopharmacology*, v. 31: p. 249-257, 1991 (13 ref, Eng).

Addition of an aqueous extract of *H.sabdariffa* calyces (2.5 ml/both 125 mg of starting crude material) inhibited the tone of various isolated muscle preparations (rabbit aortic strip, rhythmically contracting rats uterus, guinea pig tracheal chain and rat diaphragm). Other muscles were stimulated (quiescent rat uterus and frog rectus abdomininis). Intravenous injection of the extract to anaethetized cats lowered the blood pressure in a dose-response manner. NML, New Delhi.

9203-1581 Amadi, E., Offiah, N.V., Akah, P.A.(Department of Pharmacology and Toxicology, University of Nigeria, Nsukka, Nigeria) **Neuropsychopharmacologic properties of Schumanniophyton proble- maticum root**

extract. *Journal of Ethnopharmacology*, v. 33(1-2): 73-77, 1991 (19 ref, Eng).

Ethanol extract of *S.problematicum* roots, after i.p. injection in mice caused reductions in respiratory rate, body and limbtone, startle response and spontaneous locomotor activity and was capable of inhibiting amphetamine-induced hyperactivity and stereotypic behaviour. It also induced passivity, piloerection, hyperthermia and prolonged pentobarbital sleeping time. NML, New Delhi.

9203-1582 Aqel, M.B.(College of Medicine, University of Jordan, Amman, Jordan) **Relaxant effect of the volatile oil of Rosmarinus officinalis on tracheal smooth muscle.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 57-62 , 1991 (21 ref, Eng).

The volatile oil of *R.officinalis* leaves inhibited contractions of rabbit tracheal smooth muscle induced by acetylcholine stimulation and the contractions of guinea pig tracheal smooth muscle induced by histamine stimulation. This inhibition was dose-dependent and reversible. Volatile oil of *R.officinalis* leaves showed a calcium antagonistic property. NML, New Delhi.

9203-1583 Aquel, M.B., Gharaibah, M.N. , Salhab, A.S.(College of Medicine, University of Jordon, Amman, Jordan) **Direct relaxant effects of garlic juice on smooth and cardiac muscles.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 13-19 , 1991 (28 ref, Eng).

The effects of garlic juice on smooth and cardiac muscles of rabbit and guinea pig were tested *in vitro* using isolated segments of aorta, trachea and intestines and isolated rabbit hearts. Garlic juice inhibited the contractions of rabbit and guinea pig aortic rings and tracheal smooth muscles. Garlic juice also inhibited the spontaneous movements of rabbit jejunum and guinea pig ileum. All inhibitions were reversible. Hypotensive action of garlic juice has been attributed, at least in part, to a direct relaxant effect on smooth muscles. NML, New Delhi.

9203-1584 Asuzu, I.U., Anaga, A.O.(Department of Veterinary Physiology and Pharmacology, Faculty of Veterinary Medicine, University of Nigeria, Nsukka, Nigeria) **Pharmacological screening of the aqueous extract of Alstonia boonei bark.** *Fitoterapia*, v. 62(5): p. 411-417, 1991 (11 ref, Eng).

The pharmacological activities of the aqueous extract of *A.boonei* bark were tested in vivo and in vitro. The acute toxicity showed a very narrow margin between the safe and the toxic dose and poisoned mice showed nervous system signs prior to death. The extract was ineffective on isolated guinea pig ileum. It significantly increased pentobarbitone-induced sleeping time in mice at doses from 50 to 400 mg/kg, ip. The extract used alone did not show analgesic effect but significantly increased morphine-induced analgesia at doses of 100 and 200 mg/kg in mice. The extract seemed to decrease the level of parasitaemia in mice experimentally infected with Trypanosoma brucei brucei. In addition, morphological changes in the parasites indicating cell death processes were observed after treatment of mice infected with the extract.

9203-1585 Awe, S.O., Makinde, J.M.(Drug Research and Production Unit, Obafemi Awolowo University, Ile-Ife, Nigeria) **Antimalarial effects of the stem bark aqueous extracts of three Kaya species.** *Fitoterapia*, v. 62(6): p. 467-473, 1991 (6 ref, Eng).

The antimalarial effects of the stem bark aqueous extracts of *K.grandifoliola, K.ivorensis* and *K.senegalensis* were compared using albino Swiss mice infected with Plasmodium berghei berghei. Both the 4-day test and repository test showed the plant activity in the order of *K.ivorensis K.grandifoliola K.senegalensis* while only *K.grandifoliola* at 50 mg/kg day os was active against established infection.

9203-1586 Bardhan, J., Riar, S.S., Sawhney, R.C., Kein, A.K., Thomas, P., Ilavazhagan, G.(Defence Institute of Physiology and Allied Science, Delhi Cantt. 110010, India) **Neem oil- a fertility controlling agent in Rhesus monkey.** *Indian Journal of Physiology and Pharmacology*, v. 35(4): p. 278-280, 1991 (5 ref, Eng).

Neem oil (1 ml), extracted from the seeds of *Azadirachta indica* was administered deep into the vagina using a tuberculin syringe. The result revealed that neem oil on vaginal application acted both as precoital as well as post coital contraceptive agent. The menstrual cycle length or progesterone levels were not altered indicating normal ovulatory period. Hence, neem oil appear to be good spermicidal agent. NSL, New Delhi.

9203-1587 Barik, S., Bhattacharya, A. , Ganguly, A.K.(All India Institute of Public Hygiene and Health, New Delhi, India) **Effect of reserpine treatment on gastric tissue histamine concentration and mast cell population in albino rats.** *Calcutta Medical Journal*, v. 88(11&12): p. 183-189 , 1991 (18 ref, Eng).

Reserpine, an active component of *Rauwolfia serpentina* reduced sympathetic tone in albino rats and changed gastric tissue histamine concentration due to degranulation of mast cells. Direct effect of reserpine on catecholamine and subsequently on tissue histamine concentration in mast cells of gastric tissue was noticed.NSL, New Delhi.

9203-1588 Beretz, A., Cazenave, J.P.(Faculte de Pharmacie, Universite Louis Pasteur, BP 24, F-67401

Illkirch-Graffenstaden, France) **Old and new natural products as the source of modern antithrombotic drugs.** *PlantaMedica(Supplement)*, v. 57(7): p. S67-S72, 1991 (66 ref, Eng).

Present review, briefly describes three examples of current research trends that could lead to the development of new antithromboti drugs of natural origin. Flavonoids have been shown to be inhibitors of cyclic nucleotide phosphodiesterase; this enzymatic activity is one of the main mechansims of inhibition of aggregation of blood platelets by flavonoids. Some of these compounds could represent templates for the development of new inhibitors of platelet activation. Garlic *Allium sativum* has been shown to inhibit platelet aggregation *in vivo* and *in vitro*; a number of active principles has now been identified and their mechanisms of action are currently being explored. The medicinal leach (Hirudo medicinalis), has been found to contain several potent anticoagulant proteins. Among them, hirudin, a polypeptide of 65 amino acids, has been identified as one of the most potent inhibitors of thrombin. These three examples show that careful consideration of biochemical, ethnopharmacological, or toxicological properties of natural products can still constitute a valuable basis for the development of new drugs.

9203-1589 Biswas, A.R., Ramaswamy, S., Bapna, J.S.(Department of Pharmacology, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605 006, India) **Analgesic effect of Momordica charantia seed extract in mice and rats.** *Journal of Ethnopharmacology*, v. 31: p. 115-118, 1991 (3 ref, Eng).

Methanol extract of the seeds of *M.charantia* exhibited dose-related analgesic activity in mice. NML, New Delhi.

9203-1590 Caceres, A., Lopez, S.(Faculty of Chemical Sciences and Pharmacy, University of San Carlos, Edificio T-12, Ciudad Universitaria, Zona 12, PO Box 1160, Guatemala City, Guatemala) **Pharmacological properties of Moringa oleifera. 3. Effect of seed extracts in the treatment of experimental pyodermia.** *Fitoterapia*, v. 62(5): p. 449-450, 1991 (6 ref, Eng).

An experimental model of *S.aureus* pyodermia in mice was treated with an ointment with *M.oleifera* or neomycin. The healing time with the treatment was similar as the reference drug, but shorter than untreated animals, indicating that *M.oleifera* could be an alternative treatment for skin infections.

9203-1591 Carbajal, D., Casaco, A. , Arryzazabala, L., Gonzalez, R., Fuentes, V.(Department of Pharmacology, National Centre for Scientific Research, Post Box 6880, Havana City, Cuba) **Pharmacological screening of plant decoctions commonly used in Cuban folk medicine.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 21-24 , 1991 (7 ref, Eng).

Results of pharmacological screening for cardiotonic, hypotensive or bronchodilator activities of 50 plant species, depending on their traditional medical use are given. Eleven of them showed promising therapeutic activity. NML, New Delhi.

9203-1592 Champagne, D.E., Koul, O., Isman, M.B.*, Scudder, G.G.E. , Towers, G.H.N.(Plant Science, University of British Columbia, Vancouver, B.C., Canada V6T 1Z4) **Biological activity of limonoids from the Rutales.** *Phytochemistry*, v. 31(2): p. 377-394, 1992 (118 ref, Eng).

The literature on the biological activities of limonoids of known structure has been reviewed under the following sub-headings: biosynthesis and evolution of limonoids, limonoids as bitter substances, bioactivity of limonoids against insects, anti-insect activity of synthetic derivatives, anticancer activity and, other pharmacological activities. Attempts have been made to relate these activities to current concepts of the evolution of the limonoids. Effects of 78 limonoids on insect feeding and growth have been tabulated along with effective concentration.

9203-1593 Chawla, A.S., Kaith, B.S., Handa, S.S., Kulshreshtha, D.K., Srimal, R.C.(Department of Pharmaceutical Sciences, Panjab University, Chandigarh 160014, India) **Chemical investigation and anti-inflammatory activity of Pluchea lanceolata.** *Fitoterapia*, v. 62(5): p. 441-444, 1991 (7 ref, Eng).

The petrol extract of the stem and leaves of *P.lanceolata*, showing anti-inflammatory activity yielded moretenol acetate and moretenol. The chloroform-soluble portion of the methanolic extract, also endowed with anti-inflammatory activity, afforded neolupenol.

9203-1594 Choudhuri, D., Adhikary, P. , Banerji, J., Jana, S., Chatterjee, A. , Mukherjee, S.R.(Centre of Advanced Studies on Natural Products, Department of Chemistry, University College of Science, 92, Acharya Prafulla Chandra Road, Calcutta 700 009, WB, India) **Pregnancy interceptive effect of Piper betle.** *Fitoterapia*, v. 62(5): p. 397, 1991 (Eng).

In rat, the alcoholic extract of the stalk of leaves of *P.betle* was administered at four different dose levels (250-1000 mg/kg, os/day) from day 1-10 post-coitum. With an increase in the dosage of the extract, the percentage of implantation failure increased. At the dose level of 1 g/kg, os, the extract led to failure of implantation in 90 percent of the rats. The effect was accompanied by adversely altered ovarian and uterine weights and number of Corpora lutea of pregnancy. The extract did not exert estrogenic effect in ovariectomized immature rats. Failure of implantation due to anti-steroidal potentiality of the extract has been discussed as the plausible cause of antifertility effect.

9203-1595 Dai, J., Kardono, L.B.S., Tsauri, S., Padmawinata, K.P., Pezzuto, J.M., Kinghorn, A.D.(Program for Collaborative Research in the Pharmaceutical Sciences and Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago IL 60612, USA) **Phenylacetic acid derivatives and a thioamide glycoside from Entada phaseoloides.** *Phytochemistry*, v. 30(11): p. 3749-3752, 1991 (20 ref, Eng).

Three new compounds, 2-hydroxy-5-butoxyphenylacetic acid, 2-beta-D-glucopyranosyloxy-5-butoxyphenylacetic acid, and entadamide A-beta-D-glucopyranoside, in addition to the new natural product 2,5-dihydroxyphenylacetic acid methyl ester, have been isolated and characterized from seeds of *E.phaseoloides* collected in Indonesia. None of these compounds was found to demonstrate significant cytotoxicity for cultured human cancer cells, but 2-hydroxy-5-butoxyphenylacetic acid and 2,5-dihydroxyphenylacetic acid methyl ester gave ED50 values of 1.0 and 1.7 micro g ml-1, respectively, with cultured P-388 cells.

9203-1596 Davis, A.J., Hursthouse, M.B.* , Motevalli, M., O'Brien, P., Nunn, P.B.*(Department of Chemistry, Queen Mary and Westfield College, University of London, Mile End Road, London E1 4NS, UK) **The crystal structures of two plant non-protein neurotoxic amino acids.** *Phytochemistry*, v. 30(11): p. 3635-3638, 1991 (21 ref, Eng).

The X-ray crystal structures of two neurotoxic, non-protein, plant amino acids: the mono-hydrochloride (L-MeDAP).HC1) (L-MeDAP has been detected in all *Cycas* spp.) and a mono-sodium salt of beta-oxalyl-L-alpha,beta-diaminopropionic acid (Na-beta-ODAP.4H2O) (-beta-ODAP occurs in the seed of *Lathyrus sativus*), have been determined.

9203-1597 De Almeida, E.R., De Santana, C.F. , De Mello, J.F. (Departamento de Antibioticos, Universidade Federal de Pernambuco, Recife, Pernambuco 50739, Brasil) **Anti-inflammatory activity of Coutarea hexandra.** *Fitoterapia*, v. 62(5): p. 447-448, 1991 (5 ref, Eng).

The crude ethanolic extract from the stem bark of *C.hexandra* tested in two experimental models of inflammation, showed a significant anti-edematogenic action.

9203-1598 Evans, F.J.(Department of Pharmacognosy, The School of Pharmacy, University of London, 29-39 Brunswick, Square, London WC1N 1AX, UK) **Cannabinoids: The separation of central from peripheral effects on a structural basis.** *Planta Medica(Supplement)*, v. 57(7): p. S60-S67, 1991 (70 ref, Eng).

A brief history of the therapeutic uses and legal problems of *Cannabis sativa* as well as the component cannabinoids is given. This is followed by a discussion of drug development from delta1-tetrahydrocannabinol and its synthetic analogues. The controversy of whether the pharmacological effects are of central or peripheral origin is included. The potentials for the development of new drugs based on the cannabinoid structure for the treatment of pain, inflammation, and related conditions are outlined. It is concluded that the central activity of cannabinoids is confirmed and that the presence of a C-5 hydroxy group confers potent peripheral activity.

9203-1599 Feng, W., Yoshikawa, O., Shimizu, M., Yan, S., Zhong, Y. , Ikekawa, T.(National Cancer Center Research Institute, Chemotherapy Division, 5-1-1, Tsukiji, Chuo-ku, Tokyo 104, Japan) **Studies on antitumor Chinese medicines (1) On the antitumor activity of Wang Bu Liu Xing (seed of Vaccaria segetalis (Neck.) Garcke).** *Shoyakugaku Zasshi*, v. 45(3): p. 266-269, 1991 (8 ref, Eng).

Aqueous and alcohol extracts of Wang Bu Liu Xing (seed of *V.segetalis*) had an antitumor activity on an ascites tumor of sarcoma 180 when intraperitoneally administered. The antitumor component of the two extracts was found to be identical. Its cytotoxic activity on leukemia cell lines was also investigated.

9203-1600 Finnie, J.W.(South Australian Department of Agriculture, Central Veterinary Laboratories, GPO Box 1671, Adelaide, South Australia 5001) **Corynetoxin poisoning in sheep in the south-east of South Australia associated with annual beard grass (Polypogon monspeliensis).** *Australian Veterinary Journal*, v. 68(11): p. 370 , 1991 (10 ref, Eng).

Indigestion of *P.monspeliensis* containing a nematode and a bacterium by sheep has been found to be associated with toxicity similar to annual rye grass toxicity, which is caused by corynetoxins. Moreover ovine liver lesions were also observed in affected sheep with access to the annual beard grass.

9203-1601 Fintelmann, V.(Medizinische Abteilung B, Krankenhaus Rissen, Suurheid 20, D-2000 Hamburg 56, Federal Republic of Germany) **Modern phytotherapy and its uses in gastrointestional conditions.** *Planta*

Medica(Supplement), v. 57(7): p. S48-S52, 1991 (14 ref, Eng).

Applications of phytotherapy for various gastrointestinal conditions are discussed for the examples of three remedies. The first example is liquorice root, its active principle carbenoxolone, and the drugs Biogastrone and Caved-S for the treatment of gastic, peptic and duodenal ulcers; the second example is the fruits of the milk thistle, its active principles silymarin and silybinin as well as the drug Legalon for the treatment of liver diseases. The third example concerns the use of laxatives of plant origin such as plantain seeds and the drugs Agiocur and Agiolax. The review concludes with suggestions for the future course of phytotherapeutic research.

9203-1602 Grover, I.S., Saroj Bala(Department of Botanical Sciences, Guru Nanak Dev University, Amritsar 143 005, Punjab, India) **Antimutagenic activity of Terminalia chebula (myroblan) in Salmonella typhimurium.** *Indian Journal of Experimental Biology*, v. 30(4): p. 339-341, 1992 (24 ref, Eng).

Antimutagenicity of water and chloroform extracts of dried myroblan *T.chebula* was determined against two direct acting mutagens, sodium azide and 4-nitro-o-phenylenediamine(NPD) in strains TA 100 and TA1535, and TA97a and TA98 of *S.typhimurium* respectively and S9-dependent mutagen 2-aminofluorene (2-AF) in TA97a, TA98 and TA100 strains. Water extract reduced NPD as well as 2-AF induced his + revertants significantly but did not have any perceptible effect against sodium azide included his+revertants in TA100 and TA535 strains of *S.typhimurium.* The pre-incubation studies, with the said mutagen prior to plating, enhanced the inhibitory effect. Autoclaving the water extract reduced the inhibitory effect but the reduction in the effect was not significant. No inhibitory effect was observed in any of the strains and against any of the test mutagens with chloroform extract.

9203-1603 Gupta, S., Kanwar, U.*, Sanyal, S.N.(Department of Zoology, Panjab University, Chandigarh 160014, India) **Biodistribution of embelin, a benzoquinone of male antifertility potential.** *Fitoterapia*, v. 62(5): p. 419-424, 1991 (16 ref, Eng).

Administration of embelin (isolated from the seeds of *Embelia ribes* in rats at doses of 20 mg/kg by subcutaneous injection or of 75 mg/kg oral route caused significant tissue deposition of the drug in testis, epididymis, seminal vesicles, ventral prostate, liver, kidney, lung, spleen, heart, brain and intestine. Organ weight of testis, epididymis, seminal vesicles and ventral prostate was decreased while it was increased in non-reproductive tissues. These changes were reversible, as the animals tend to recover during the 15- and 30-day recovery periods. Pharmacokinetic studies showed that, after subcutaneous administration, the fractional turnover rate constant was higher while the biological half life was shorter, thereby indicating faster elimination as compared to the oral treatment.

9203-1604 Herbert, J.M., Maffrand, J.P. , Taoubi, K., Augereau, J.M., Fouraste, I. , Gleye, J.(SANOFI RECHERCHE, 195 Route d' Espagne, 31036 Toulouse Cedex, France) **Verbascoside isolated from Lantana camara, an inhibitor of protein kinase C.** *Journal of Natural Products*, v. 54(6): p. 1595-1600 , 1991 (18 ref, Eng).

Verbascoside isolated from leaves of *L.camara* is an inhibitor of protein kinase C(PKC)from the rat brain. Half-maximal inhibition of the kinase occurs at 25 micro M. Verbascoside interacted with the catalytic domain of PKC and was a competitive inhibitor with respect to ATP(Ki=22 microM) and a non-competitive inhibitor with respect to the phosphate acceptor (histone IIIS). This efect was further evidenced by the fact that verbascoside inhibited native PKC and its catalytic fragment identically and did not affect {3H}-phorbol-12,13-dibutyrate binding to PKC. The antitumor activity of verbascoside measured *in vitro* might be due at least in part to inhibition of PKC.

9203-1605 Huo, J.Z., Xia, W.J., Xue, M. , Zhou, Z.T.(Institute of Traditional Chinese Veterinary Medicine, Chinese Academy of Agricultural Sciences, Lanzhou 730 050, China) **Pharmacokinetics and metabolism of artesunate in cows.** *Acta Pharmaceutica Sinica*, v. 26(3): p. 225-227, 1991 (10 ref, Chi, Eng).

The pharmacokinetics of artesunate (AS) was studied in 3 cows, single dose of AS (5 mg/kg) were administered intravenously and the drug concentrations were determined by means of a TLC method developed in the laboratory. The plasma drug concentration-time course of AS, after the treatment with a pharmacokinetic microcomputer program was found to be best fitted to a two compartment open model and its pharmacolinetic parameters were as follows, T1/2 alpaha=2.43 min, T1/2 beta=31.45 min, V4+0.124 L/Kg, VB=0.937L/Kg, ClB=0.0215 L/Kg min, AUC=236 mg/L min. Dihydroartemisinine(DHA), the main active metabolite of AS in the bodies, was detected simultaneously. Peak plasma concentration of 3.5 microg/ml of DHA was reached at about 3 minutes after dosing and the AUC was 82 mg/L. min.

9203-1606 Islam, M.W., Tariq, M., Ageel, A.M. , Al-Said, M.S., Al-Yhya, A.M.(College of Pharmacy, King Saud University, P O Box 2457, Riyadh 11451, Saudi Arabia) **Effects of Salvia haematodes on sexual behaviour of male rats.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 67-72 , 1991 (Eng).

Ethanolic extract of *S.haematodes* roots (500 mg/kg, orally) produced a significant increase in episodes of femile erection and ejaculation latency in male rats. These findings have been reported to support the folk-use of this plant as aphrodisiac and for the treatment of premature ejaculation. NML, New Delhi.

9203-1607 Jurg, A., Tomas, T., Pividal, J.(Department of Traditional Medicine, National Health Institute, P O Box 264, Maputo, Mozambique) **Antimalarial activity of some plant remedies in use in Marracuene, southern Mozambique.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 79-83 , 1991 (9 ref, Eng).

Ethanolic and aqueens extracts of roots and ethanolic extract of stem of *Bridelia cathartica* and *Spirostachys africana* caused a 50 percent inhibition of parasite growth at an incubation cancentration of 0.05 micro g/ml. Dose dependent antimalarial activity of *Strychnos henningsii, Crotalaria monteiro, Clematis viridiflora* and *Momordica balsamina* is also discussed. NML, New Delhi.

9203-1608 Kameshwari, M., Kalyanaswamy, S. , Devi, K.(Department of Zoology, University College of Science, Osmania University, Hyderabad 500 007, AP, India) **Evaluation of theophylline for mutagenicity effective in Swiss albino mice.** *Agricultural and Biological Research*, v. 7(2): p. 108-111, 1991 (15 ref, Eng).

Theophylline (1,3-dimethylxanthine) is an alkaloid occurring in tea leaves. *Thea* spp. The mutagenic effects of theophylline were studied in germ cells of male mice. The animals were sacrificed after 60 days of treatment of the alkaloid and analysed for the incidence of chromosomal aberrations. A significant dose dependent increase in the frequence of aberration in germ cells of theophylline teated animals were observed. NSL, New Delhi.

9203-1609 Koch, H.P.*, Jager, W., Hysek, J. , Korpert, B. (Institute of Pharmaceutical Chemistry, Division of Biopharmaceutics, University of Vienna, Waehringer St. 10, A-1090 Vienna, Austria) **Garlic and onion extracts. In vitro inhibition of adenosine deaminase.** *Phytotherapy Research*, v.6(1):p. 50-52, 1992 (10 ref, Eng).

Several specimens of garlic bulbs *Allium sativum*, fresh sap and rehydrated dry powder), as well as a few other *Allium* species, were assayed for their ability to inhibit the enzyme adenosine deaminase (ADA). A clear dose-dependent inhibition of enzyme activity, leading to an accumulation of the substrate adenosine in the system, was observed. A standard in vitro testing procedure was derived which is suitable for quality assessment of either raw or dried garlic, as well as for bioequivalence control of pharmaceutical products derived therefrom.

9203-1610 Krishna de, Amit, Ghosh, J.J.(Department of Biochemistry, University College of Science, 35 Ballygunge Circular Road, Calcutta 700 019, India) **Studies on capsaicin inhibition of chemically induced lipid peroxidation in the lung and liver tissues of rat.** *Phytotherapy Research*, v. 6(1):p. 34-37, 1992 (13 ref, Eng).

The stabilization of rat lung membrane lipid system is supported by present findings that capsaicin (obtained from *Capsicum* species) pretreatment causes significant inhibition of various chemically induced lipid peroxidative changes at both cellular and subcellular levels. Both in vivo and in vitro studies, using whole lung and liver tissue slices and mitochondrial and microsomal fractions, have shown that capsaicin pretreatment inhibits peroxidative changes induced by different chemical irritants such as chloroform, dichloromethane, carbon tetrachloride as well as ferrous sulphate.

9203-1611 Krishnaswamy, M., Susan, T., Reddy, D.R., Rao, R.B., Kundu, A.B.(Captain Srinivasa Murti Drug Research Insitute for Ayurveda, Arumbakkam, Madras 600106, TN, India) **Toxicity studies on echitamine chloride- a potential anticancer drug.** *Journal of Research in Ayurveda and Siddha*, v. 12(1-2): p. 56-65, 1991 (10 ref, Eng).

Alkaloid echitamine chloride isolated from *Alstonia scholaris*, earlier showing regression of tumours, did not show any toxic effect in experimental rats.

9203-1612 Kvasnickova, E., Sroler, A. , Nobilis, M., Hais, I.M. (Department of Biochemistry, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechoslovakia) **Biotransformation of hyrcanoside in vitro. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of the Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15, p. 105, 1989 (Eng).

The in vitro biotransformation of hyrcanoside, a cardiotonic glycoside from the seeds of *C.varia*, by the enzymes of subcellular fractions and those of isolated hepatocytes has been studied. Incubation of hyrcanoside with the microsomal liver fraction of rats produced two metabolites in the presence of NADH and one in the presence of NADPH. When different species were compared, one spot was noted with NADH or NADPH when subcellular fractions from rabbits or guinea-pigs were incubated, whereas with materials from rats, mice and syrian hamsters, two spots were noted in the incubation with NADH.

9203-1613 Kweifio-Okai, G.(Department of Anatomy and Physiology, Phillip Institute of Technology, Bundoora 3083, Australia) **Antiinflammatory activity of a Ghanaian antiarthritic herbal preparation:II.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 129-133 , 1991 (12 ref, Eng).

A boiling water extract from a mixture of *Alstonia boonei* and *Rauvolfia vomitoria* root barks and *Elaeis guineensis* nuts without pericarp was tested for its antiinflammatory activity in rats. The extract fed in drinking water ad libitum reduced ipsilateral ankle adjuvant swelling by an average of 16 percent for the period of +4 to +17 days and improved weight gain. NML, New Delhi.

9203-1614 Lami, N., Kadota, S., Kikuchi, T.* , Momose, Y.(Research Institute for Wakan-Yaku (Oriental Medicines), Toyama Medical and Pharmaceutical University, 2630 Sugitani, Toyama 930-01, Japan) **Constituents of the roots of Boerhaavia diffusa L. III. Identification of Ca2+ channel antagonistic compound from the methanol extract.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1551-1555, 1991 (11 ref, Eng).

Two known lignans, liriodendrin and syringaresinol mono-beta-D-glucoside, have been isolated from the methanol extract of the roots of *B.diffusa*, and the former compound was found to exhibit a significant calcium (Ca2+) channel antagonistic effect in frog heart single cells using the whole-cell voltage clamp method. Reexamination of the carbon-13 nuclear magnetic resonance spectra of these compounds was also carried out by the use of two-dimensional NMR techniques including a 1H-detected heteronuclear multiple bond connectivity (HMBC) experiment, and it was found that the previous signal assignments for C-1' and C-4' have to be revised.

9203-1615 Li, Z.T., Yang, B.J., Ma, G.E.*(Department of Pharmacy, Zhejiang Medical University, Hasnzhou 310 006, China) **Chemical studies of Salvia miltiorrhiza F. Alba.** *Acta Pharmaceutica Sinica*, v. 26(3): p. 202-213, 1991 (9 ref, Chi, Eng).

Fourteen constituents were isolated from the roots of *S.miltiorrhiza.* Two of them were new compounds and were named 1,2,15,16-tetrahydro-tanshiquinone and tanshinaldehyde. The others were identified as Ro-090680, dihydroisotanshone I, danshexinkun B, miltirone, nortanshinone, hydroxytanshinone II-A, tanshinone I, dihydrotanshinone I, tanshinone II-A, cryptotanshinone, methylenetanshiquinone, methyltanshinonate. 1,2,15,16-Tetrahydrotansiquinone and Ro-090680 showed inhibitory acti- vity against P388 leukemia cell*in vitro.* RO-090680 was reported to be potent inhibitor of rabbit platelet aggregation induced by collagen.

9203-1616 Liu, Y., Shi, C.Z., Zhang, J.T.(Institute of Materia Medica, Chinese Academy of Medical Sciences, Beijing 100 050, China) **Anti-lipidperoxidation and cerebral protective effects of clausenamide.** *Acta Pharmaceutica Sinica*, v. 26(3): p. 166-170, 1991 (12 ref, Chi, Eng).

Clausenamide is a compound isolated from *Clausena lansium* with the structure similar to piracetam. Pharmacological experiments showed that clausenamide po 100 to 200 mg/kg prolonged both the duration of gasping after decapitation and the survival time after sc NaNO2, 225 mg/kg clausenamide at the concentration of 10-5 mol/L inhibited the contraction of basilar artery caused by 5-HT, PGF 2alpha and arachidonic acid, indicating that clausenamide is a cerebral protective agent. In addition, multiple doses clausenamide were shown to inhibit the liver lipid peroxidation caused by 50 percent alcohol and increase in GSH peroxidase activity in rat liver and brain cytosol.

9203-1617 Lumonadio, L., Atassi, G. , Vanhaelen, M.*, Vanhaelen-Fastre, R.(Laboratoire de Pharmacognosie, Institut de Pharmacie, CP 205-4, Universite Libre de Bruxelles, Boulevard de Triomphe, B-1050 Bruxelles, Belgium) **Antitumor activity of quassinoids from Hannoa klaineana.** *Journal of Ethnopharmacology*, v. 31: p. 59-65, 1991 (10 ref, Eng).

Of the five quassinoids isolated from the root bark of *H.klaineana* only 15-desacetylundulatone was found active against P388 mouse lymphocytic leukemia cells and colon 38 adenocarcinoma. Undulatone and especially 15-O-beta-D-glucopyranosyl-21-hydroxy-glaucarubolone were found to be more toxic while 6alpha-tigloyloxy-glaucarubol and 21-hydroxyglaucarubolone were found inactive. Structure-activity relationships are discussed. NML, New Delhi.

9203-1618 Mand, J.K., Soni, G.L., Gupta, P.P.*, Rattan Singh (Department of Biochemistry, Punjab Agricultural University, Ludhiana 141 004, Punjab, India) **Effect of Amla (Emblica officinalis) on the development of atherosclerosis on hypercholesterolemic rabbits.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 1-7, 1991 (22 ref, Eng).

Feeding of Amla to the hypercholesterolemic rabbits for 12 weeks showed a two prong effect, its feeding increased the lipid mobilization and catabolism and retarded the deposition of lipids in the extrahepatic tissues. Feeding of *E.officianalis* initially raised the plasma lipids and cholesterol levels but by the end of 12 weeks, their levels were reduced significantly below the levels in the control group. Lipid levels of liver were also significantly lowered. Though lipid levels of aorta increased during this period but the increase was much less in Amla fed animals as compared to the control group. The degree of atherosclerosis at the end of 12 weeks of Amla feeding was lower as compared to that in the control group.

9203-1619 Mar, W., Tan, G.T., Cordell, G.A. , Pezzuto, J.M.*, Jurcic, K., Offermann, F. , Redl, K., Steinke, B., Wagner, H.(Department of Medicinal Chemistry and Pharmacognsoy, and Program for Collaborative Research in the Pharmaceutical Sciences, College of Pharmacy, University of Illinois at Chicago, Chicago, Illinois 60612, USA) **Bilogical activity of novel macrocyclic alkaloids (budmunchiamines) from Albizia amara detected on the basis of interaction with DNA.** *Journal of Natural Products*, v. 54(6): p. 1531-1542 , 1991 (39 ref, Eng).

Extracts derived from *A.amara* seeds were found to demonstrate activity in a recently developed HPLC system designed to detect compounds capable of interacting with DNA. Further investigation led to the procurement of four sets of alkaloid isolates X1-X4 that were found to be macrocyclic pithecolobine alkaloids. All four isolates interacted with calf thymus DNA and were generally cytotoxic with a battery of cultured mammalian cells. Isolates X1 and X3 were bactericidal, but not mutagenic. Isolate X1 was found to inhibit the catalytic activity of DNA polymerase, RNA polymerase, and HIV-1 reverse transcriptase. In addition, isolate X1 inhibited each of the following: platelet aggregation, human lymphocyte transformation, phorbol-ester-induced chemiluminescence with human granulocytes, and cyclooxygenase activity. Detection of these alkaloids on the basis of their interaction with DNA exemplifies the validity of this approach.

9203-1620 Murakami, N., Tanase, T., Nagai, S. , Sato, Y., Ueda, T. , Sakakibara, J. , Ando, H., Hotta, Y., Takeya, K.(Faculty of Pharmaceutical Sciences, Nagoya City University, Tanabe-dori, Mizuho-ku, Nagoya 467, Japan) **Studies on cardiac ingredients of plants. VII. Chemical transformation of proscillaridin by means of the Diels-Alder reaction and biological activities of its derivatives.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 1962-1966, 1991 (9 ref, Eng).

The Diels-Alder reactions of a cardiac glycoside, proscillaridin (1), with some dienophiles were investigated. The reaction of 1 with alkenes such as methyl vinyl ketone and methyl acrylate afforded 3-oxo-2-oxabicyclo{2.2.2}-oct-7-enes(2-5) and para-substituted benzene derivatives (6 and 7), while 1 reacted with alkynes (3-butyn-2-one, methyl propiolate) to yield para- or meta-substituted benzene derivatives (6-9). The biological activities of the resulting derivatives were evaluated by the use of isolated guinea-pig papillary muscle preparations and Na+,K+-adenosine triphosphatase (ATPase) preparation from dog kidney. Among the proscillaridin derivatives, compounds 4 and 7 moderately inhibited Na+,K+-ATPase activity. Furthermore, the concentration range of 7 over which its positive inotropic effect on guinea-pig papillary muscle preparations, increased from 5 percent to 95 percent of maximum was broader than that of 1, i.e. concentration dependency was maintained over a greater range of concentration.

9203-1621 Naik, S.R., Barbosa Filho, J.M. , Dhuley, J.N., Deshmukh, V.(Pharmacology and Toxicology Laboratory, Research Centre, Hindustan Antibiotics Limited, Pimpri, Pune 411 01, Maharashtra, India) **Probable mechenism of natural product isolated from Bumelia sartorum.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 37-44 , 1991 (20 ref, Eng).

Bassic acid, an unsaturated triterpene acid isolated from an ethanol extract of *B.sartorum* root bark, elicited significant hypoglycemic activity in alloxam-diabetic rats and altered the pattern of glucose tolerance in these animals. Hypoglycemic activity of bassic acid mediated through enhanced secretion of insulin from the pancreatic beta-cells has been suggested. NML, New Delhi.

9203-1622 Nair, S.C., Salami, M.J., Panikkar, B., Panikkar, K.R.* (Amala Cancer Research Centre, Amala Nagar, Trichur 680 555, Kerala, India) **Modulatory effects of Crocus sativus and Nigella sativa extracts on cisplatin-induced toxicity in mice.** *Journal of Ethnopharmacology*, v. 31: p. 75-83, 1991 (21 ref, Eng).

In mice, an extract of *C.sativus* stigmas partially prevented the decrease in body weight, hemoglobin levels and leucocyte counts caused by 2 mg/kg of cisplatin i.p. for 5 days. Treatment with *C.sativus* extract also significantly prolonged the life span of cisplatin-treated mice almost three fold. In contrast, an extract of *N.sativa* seed only tended to protect from cisplatin-induced falls in hemoglobin levels and leucocyte counts. NML, New Delhi.

9203-1623 Nair, S.C., Panikkar, Beena , Panikkar, K.R.(Amala Cancer Research Centre, Amala Nagar, Trichur 680 553, Kerala, India) **Potential antitumour activity of Ixora javanica leaves extract.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 41-44, 1991 (Eng).

The extract of *I.javanica* leaves was found to prossess anticancer activity. 51 Chromium release cytotoxicity assay was used to quantify the extent of cellular membrane damage. 71.42+-1.3, 61.36+-4.21 and 70.05+-0.74 percent cytolysis was observed using Sarcoma-180, Ehrlich ascites carcinoma and Dalton's lymphoma ascites tumour cells *in vitro* in presence of 40, 100 and 60 microgram in one ml minimum essential medium of the drug. Inhibition in the growth of K562 (myelogenious) leukemia cells in culture was noted.

9203-1624 Nakamura, H., Kumazawa, N., Ohta, S., Fujita, T., Iwasaki, T., Shinoda, M.(Faculty of Pharmaceutical Sciences, Hoshi University, 2-4-41, Ebara, Shingawa-ku, Tokyo 142, Japan) **Protective effects of the fractions extracted from the callus of Acer nikoense Maxim. on carbon tetrachloride induced liver injury.** *Yakugaku Zasshi*, v. 111(10): p. 585-591, 1991 (14 ref, Eng).

Protective effects of the fractions extracted from the callus of *A. nikoense* on rat liver injury have been reported.

9203-1625 Ozturk, Y., Aydm, S., Baser, K.H.C. , Kirmer, N., Kurtar-Ozturk, N.(Anadolu University, Medicinal Plants Research Centre and Faculty of Pharmacy, Department of Pharmacology 26470, Eskisehir, Turkey) **Hepatoprotective activity of Hypericum perforatum L. alcoholic extract in rodents.** *Phytotherapy Research*, v.6(1): p. 44-46, 1992 (27 ref, Eng).

Hepatoprotective effect of *H.perforatum* was investigated in vivo by cannulating the rat bile duct for choleretic activity and by barbiturate sleeping time following CCl4-induced hepatic injury. The increase in the bile secretion following intraduodenal injection of *H.perforatum* extract, and the appearance of its constituents in the bile were observed by its colour change and this observation was confirmed by thin layer chromatographic analysis suggesting the excretion of hypericin into the bile as well. It was observed that the extract shortens the barbiturate sleeping time of CCl4-treated mice suggesting hepatoprotection.

9203-1626 Pal, S., Nag Chaudhuri, A.K.(Division of Pharmacology, Department of Pharmaceutical Technology, Jadavpur University, Calcutta 700 032, WB, India) **Studies on the anti-ulcer activity of a Bryophyllum pinnatum leaf extract in experimental animals.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 97-102 , 1991 (20 ref, Eng).

A methanolic fraction from an extract of *B.pinnatum* leaves was to possess significant antiulcer activity in nine different experimental animals models. Premedication tests in rats revealed its protective activity against the gastric regions. Significant enhancement of the healing process was found to occur in acetic-acid-induced chronic gastric lesions in rats. NML, New Delhi.

9203-1627 Pathak, D., Pathak, K., Singla, A.K.*(Department of Pharmaceutical Sciences, Panjab University, Chandigarh 160014, India) **Flavonoids as medicinal agents- recent advances.** *Fitoterapia*, nv. 62(5): p. 371-389, 1991 (166 ref, Eng).

The reports of the last decade on the pharmacological actions of only naturally occurring flavonoids with their chemical structures is reviewed. The related class of compounds e.g. leucoanthocyanins, anthocyanins, aurones etc. have not been covered. The facets of flavonoids reviewed pertain to anti-inflammatory, antihepatotoxic, central vascular system, antitumour, antimicrobial, antiviral, enzyme inhibiting, antioxidant and miscellaneous activities.

9203-1628 Pethick, D.W., Chapman, H.M.(School of Veterinary Studies, Murdoch University, Murdoch, Western Australia 6150) **The effects of Arctotheca calendula (cape weed) on digestive function of sheep.** *Australian Veterinary Journal*, v. 68(11): p. 361-363 , 1991 (18 ref, Eng).

Thirteen two year old Merino sheep were fed 6kg of freshly cut capeweed (dry matter 11.3 percent) daily for 7 days and its effect on digestive function in the rumen, calcum and calon were studied and compared with those taking capeweed free pastures. The results indicate that capeweed did not cause diarrhoea, and the plants were as nutritious as pasture containing grasses and clovers. The main digestive disadvantage of capeweed in the single feeding trial was that sheep eating it lost body weight due to their inability to consume enough matter.

9203-1629 Pezzuto, J.M., Che, C.T., McPherson, D.D., Zhu, J.P., Topcu, G., Erdelmeier, C.A.J., Cordeli, G.A.(Program for Collaborative Research in the Pharmaceutical Sciences, and Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, Illinois 60612, USA) **DNA as an affinity probe useful in the detection and isolation of biologically active natural products.** *Journal of Natural Products*, v. 54(6): p. 1522-1530 , 1991 (21 ref, Eng).

A simplified HPLC system is described for the detection of compounds capable of binding to DNA. Compounds known to interact with DNA were found to invoke a positive response with this system, and the concentration-dependence and sensitivity were determined. When applied to 17 randomly selected plant extracts, five elicited a positive response and, of these, four were subsequently found to be cytotoxic with cultured KB or P-388 cells. One of these extracts (derived from *Albizia amara*) has been further processed and found to contain a group of structurally-unique macrocyclic alkaloids that demonstrate a variety of biological activities.

9203-1630 Pomilio, A.B., Buschi, C.A., Rutty, G.A., Rumi, I.S. (Departmento de Quimica Organica, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Pabellon 2, Ciudad Universitaria, 1428 Buenos Aires, Argentina) **Antitumor screening of Gomphrena species.** *Fitoterapia*, v. 62(6): p. 511-514, 1991 (11 ref, Eng).

The effect of petrol and methanolic extracts of *G.haenkeanna,G.perennis, G.meyeniana, G.martiana* and *G.boliviana* on a murine tumor line, Sarcoma 180(S 180), was investigated. Upon inoculation of petrol extracts of *G.martiana* and *G.boliviana* a decrease of S 180 growth was observed. Extracts of *G.haenkenna, G.perennis*, and *G.meyeniana* were devoid of in vivo activity.

9203-1631 Prakash, A.O., Sisodia, B., Mathur, R.(School of Studies in Zoology, Jiwaji University, Gwalior 474011, MP, India) **Antiimplantation mechanism of action of embelin in rats.** *Phytotherapy Research*, v. 6(1):p. 29-33, 1992 (17 ref, Eng).

The antiimplantation mechanism of embelin (obtained from *Embelia ribes*) has been studied in rats. Its administration caused a significant reduction in ovarian and uterine wet weight. Ovarian histology revealed newly formed Corpora lutea and the biochemical constituents were decreased. Similarly, the uterus of pregnant treated rats did not show any preparative changes, decidualization, apposition reaction, stimulation or proliferation. Biochemical constituents also behaved as those of cyclic rats even on the day of implantation. These findings suggest that the administration of embelin to pregnant rats keeps the ovary and uterus in a cyclic condition.

9203-1632 Qureshi, A., Saifi, A.Q., Modi, N.T., Rao, S.S., Khan, N.A.(Department of Pharmacology, Gandhi Medical College, Bhopal 462 001, MP, India) **Proteins and alkaloids of Jatropha curcus Linn..** *Oriental Journal of Chemistry*, v. 6(4): p. 275-277 , 1990 (9 ref, Eng).

Four globulins and seven albumins were identified and isolated from crude water extract of *J.curcus*. Four albumin factors were tested for LD 50, prothrombin, bleeding and coagulation time. Curcin, protein factor III was toxic with LD 50-150 microg/100 G. body wt. im. It also increased prothrombin, bleeding and coagulation time. Three alkaloids were obtained from the alcoholic extract of Jatropha seeds. Alkaloids caused swelling and degranulation of WBCs and; adhesion, haemolysis of RBCs.

9203-1633 Rao, S.G., Udupa, A.L., Udupa, S.L. , Rao, P.G.M., Rao, G., Kulkarni, D.R.(Department of Pharmacology, Kasturba Medical College, Manipal 576 119, Karnataka, India) **Calendula and Hypericum: Two homeopathic drugs promoting wound healing in rats.** *Fitoterapia*, v. 62(6): p. 508-510, 1991 (13 ref, Eng).

The effect of two homeopathic drugs tinctures of *Calendula and Hypericum* on wound healing in male albino rats was studied on three models viz., excision, incision and dead space wounds. The tincture of *Calendula*was applied locally excision and incision while the tincture of *Hypericum* was given orally all the three models. Rate of wound contraction, period of epithelisation and wound breaking strength were determined. The tincture of *Hypericum* enhanced the wound breaking strength and reduced the period of epithelisation. The tincture of *Calendula* was also able to influence wound healing favourably but not as effectively as the tincture of *Hypericum*.

9203-1634 Rathore, H.S., Nandi, K.K.(School of Studies in Zoology, Vikram University, Ujjain 456 010, MP, India) **Further studies on the protective effect of Liv-52 against CD-toxicity in mammalian system.** *Indian Drugs*, v. 29(4): p. 149-154, 1992 (8 ref, Eng).

The effect of Liv 52 treatment on cadmium induced liver,spleen and kidney damage in rabbits is reported. In first group no treatment was given i.e. controls. In second group each rabbit received 1 mg CdCl/week for 6 weeks. In third group each rabbit received 1 mg ofCdC12 and 2 ml of Liv. 52 orally daily in addition to 1 mg CdC12/week for 6 weeks. Cd-treated group showed structural and functional disturbance in liver, kidney and spleen. Liv 52 treatment significantly reduced both histological and biochemical abnormalities as compared to Cd-treated group. Results confirm protective role of this drug against Cd-toxicity.

9203-1635 Ratnasooriya, W.D., Jayawardena, K.G.I. , Premakumara, G.A.S.(Department of Zoology, University of Colombo, Colombo 3, Sri Lanka) **Antimotility effects of Piper betle (L.) leaf extract on washed human spermatozoa.** *Journal of National Science Council of Sri Lanka*, v. 18 (1): p. 53-60, 1990 (17 ref, Eng).

Polyvinylpyrrolidone (10,000 MW) co-precipitate of dichloromethane: methanol (1:1) extract of *P.betle* leaves were investigated for antimotility effects on washed human spermatozoa (up to 60 min. of incubation) using three parameters (percentage motility, average forward velocity and motility index). The concentrations tested were 0.25, 0.5, 1.25, 2.5 and 5.0 mg/ml. The extract impaired these motility parameters in a dose related manner. The concentrations producing 50 percent inhibition were: percentage motility 0.47+-0.11 mg/ml, average forward velocity 0.37+00.0.07 mg/ml and motility index 0.31 +-0.02 mg/ml (mean+-s.c.m.). Furthermore, the antimotility effects were irreversible and were not accompanied either with changes in the fluidity of the plasma membrane or in the viability of spermatozoa.

9203-1636 Ratnasooriya, W.D., Amarasekera, A.S. , Perera, N.S.D., Premakumara, G.A.S.(Department of Zoology, University of Colombo, Colombo 3, Sri Lanka) **Sperm antimotility properties of a seed extract of Abrus**

precatorius. *Journal of Ethnopharmacology*, v. 33(1-2): p. 85-90 , 1991 (19 ref, Eng).

Methanol extract *A.precatorius* seeds caused a concentration-related impairment of percentage sperm motility of washed humen spermatozoa. The effect was essentially found to be irreversible. NML,New Delhi.

9203-1637 Rodriguez C, J., Loyola, J. , Schmeda-Hirschmann, G. (Facultad de Recursos Naturales, Departamento de Ciencias Biologicas, universidad de Talca, Casilla 747, Talca, Chile) **Hypoglycaemic activity of Hexachlamys edulis ('Yvahai') extract in rats.** *Phytotherapy Research*, v. 6(1): p. 47-49, 1992 (6 ref, Eng).

The hypoglycaemic activity of the extract of the crude drug 'Yvahai' *H.edulis*, was assessed on normoglycaemic and alloxan-diabetic rats. After 7 days of oral treatment at 100 mg extract/kg body weight, Yvahai significantly reduced glycaemia in normal (p) and diabetic (p) rats during an oral glucose tolerance test. The maximum effect was observed between 1.5 and 2.5 h after glucose administration in normoglycaemic rats, and at 1.0 h in diabetic animals. A single oral dose of 500 mg extract/kg administered to normoglycaemic rats 1h before glucose, elicited a significant reduction (p) in the percent increase in glycaemia compared with vehicle-treated animals. The effect was comparable to a single oral dose of 100 mg/kg tolbutamide. During the oral toxicity study, animals exhibited no symptoms of drug-induced toxicity with doses upto 5 g/kg.

9203-1638 Rucker, G., Manns, D., Wilbert, S. , Rucker, G., Manns, D., Wilbert, S.(Pharmazeutisches Institut der Universitat Bonn, Kreuzbergweg 26, D-5300 Bonn 1, Germany) **Homoditerpene peroxides from Artemisia absinthium.** *Phytochemistry*, v. 31(1): p. 340-342, 1992 (5 ref, Eng).

Two new diastereomeric homoditerpene peroxides have been isolated from the aerial parts of wormwood (*A.absinthium*). The mixture of both compounds showed antimalarial activity *in vitro* with an EC50 of 1microg ml1.

9203-1639 Saeed, A., Jamal, H.S.S.(Department of Academic Research, Bait-al-Hikmat at Madinat-al-Hikmat, Karachi 74700, Pakistan) **Herbs known to cause allergy.** *Hamdard Medicus*, v. 34(4): p. 97-121, 1991 (24 ref, Eng).

Aeroallergens known to cause allergic rhinitis, bronchial asthma and hypersensitivity pneumonitis, plants which can cause irritant dermatitis, photodermatitis and contact dermatitis have been enlisted.

9203-1640 Santosh Kumari, K.S., Devi, K.S.(Department of Biochemistry, University of Kerala, Kariavattom, Kerala, India) **Effect of some Ayurvedic drugs on lipid metabolism in DOCA/Salt administered diabetic rabbits.** *Indian Medicine*, v. 4(1): p. 9-15, 1992 (15 ref, Eng).

Mixture of Nisakathakathi Kashayam(NK) and Rasnairandadi Kashayam(RK)drugs (2:1v/v) alongwith deoxycorticosteroid acetate (DOCA) administered to diabetic hypertensive rabbits reduced hypercholesteolemia hypertri-glyceridemia and hyperlipidemia. NSL, New Delhi.

9203-1641 Saraf, S., Pathak, A.K., Dixit, V.K.(Department of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar 470 003, MP, India) **Hair growth promoting activity of Tridax procumbens.** *Fitoterapia*, v. 62(6): p. 495-498, 1991 (6 ref, Eng).

The ethanolic extract of aerial parts of *T.procumbens* was administered to albino rats as 10 percent ointment as well as orally (100 mg/kg/day) for 21 days. Both treatments were effective. To locate the activity in the extract, fractionation with different solvents was under-taken and the fractions were evaluated for this property. Petrol fraction was found active. Column chromatography of petrol fraction and screening of eluates suggested the activity in initial fractions.

9203-1642 Saraf, S., Dixit, V.K.*(Department of Pharmaceutical Sciences, Dr. Harisingh Gour Vishwavidyalaya, Sagar 470 003, MP, India) **Hepatoprotective activity of Tridax procumbens - part II.** *Fitoterapia*, v. 62(6): p. 534-536, 1991 (16 ref, Eng).

Hepatoprotective effect of the ethanolic extract of the aerial parts of *T.procumbens* and its choloroform soluble and insoluble fractions were studied on acute hepatitis induced in rats by single dose of CCl4. Hepatoprotective activity was monitored by estimating serum transaminases, serum alkaline phosphatase, serum bilirubin and serum albumin. Only the ethanolic extract and the chloroform insoluble fraction exhibited hepatoprotective activity.

9203-1643 Saxena, V.K., Bhadoria, B.K.(Chemistry Department, Dr. H S Gour University, Sagar, MP, India) **Estrogenic activity of the isoflavonoid constitutents of Sopubia delphinifolia.** *Journal of Scientific Research in Plants & Medicines* , v. 10(1-4): p. 30-33, 1989 ((Recd.1991); 6 ref, Eng).

S.delphinifolia is a commonly growing hemiroot parasite herbage in Bundelkhand region of India. Its juice is reported to possess healing property to the sores caused by moisture, and locally it is known for its abortificient character. The estrogenic activity of isoflavonoids isolated from its stem is being reported for the first time. The estrogenic principles have been identified by spectroscopic and chemical methods.

9203-1644 Sen, T., Nag Chaudhuri, A.K.(Division of Pharmacology, Department of Pharmaceutical Technology Jadavpur University, Calcutta 700 032, WB, India) **Antiinflammatory evaluation of a Pluchea indica root extract.** *Journal of Ethnopharmacology,* v. 33(1-2): p. 135-141 , 1991 (22 ref, Eng).

A methanolic fraction of a chloroform extract of defatted *P.indica* roots, showed significant inhibitory activity. The extract inhibited protein exudation and leucocyte migration. Efficacy of the extract in the exudative, proliferative and chronic stages of inflammation has been discussed. NML, New Delhi.

9203-1645 Sertie, J.A.A., Basile, A.C. , Panizza, S., Oshiro, T.T. , Azzolini, C.P. , Penna, S.C.(Department of Pharmacology, Institute de Ciencias Biomedicas, Universidade de Sao Paulo, 05508 Sao Paulo, SP Brazil) **Pharmacological assay of Cordia verbenacea III: Oral and topical antiinflammatory activity and gastrotoxicity of crude leaf extracts.** *Journal of Ethnopharmacology,* v. 31: p. 239-247, 1991 (18 ref, Eng).

The oral administration of 1.24 mg/kg of the lyophilized 70 percent ethanol extract of leaves of *C.varbenacea* significantly inhibited nystatin-induced oedema in rats and mice. Topical application of the extract at a dose of 0.09 mg/ear in mice was clearly more effective than 1.0 mg/ear of naproxen in the reduction of the ear oedema induced by croton oil. At antiinflammatory doses, the extract showed an important protective effect on the gastric mucosa, reducing significantly the number of gastric lesions. NML, New Delhi.

9203-1646 Shimizu, M., Matsuzawa, T., Suzuki, S., Yoshizaki, M., Morita, N.(Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University, 2630 Sugitani, Toyama 930-01, Japan) **Evaluation of Angelicae radix (Touki) by the inhibitory effect on platelet aggregation.** *Chemical & Pharmaceutical Bulletin,* v. 39(8): p. 2046-2048, 1991 (10 ref, Eng).

Quality evaluation of Angelicae Radix(Touki)(*Angelica acutiloba*) was discussed referring to its inhibitory effect on platelet aggregation. No better correlation was observed in quality determined morphologically from the above-ground part of Touki and that determined by antiplatelet aggregation(APA) effects. Phthalides and adenosine, known to be the major components of Touki, were found not sufficient to evaluate the Touki quality as regards APA. Other APA active components have been studied and it was concluded that the APA effect of Touki results from the combined action of plural components. The importance of determining quality based on the action of total extract to meet the purpose for which the substance is to be used was suggested.

9203-1647 Shirwaikar, A., Srinivasan, K.K. , Vasanth Kumar, A., Krishnanand, B.R.(Department of Pharmaceutical Sciences, Manipal 576119, Karnataka, India) **Antihepatotoxic activity of 'Kamilari' a marketed Ayurvedic preparation.** *Indian Drugs,* v. 29(5): p. 219-224, 1992 (5 ref, Eng).

Ayurvedic drug 'Kamilari' consisting extracts of *Thespesia populnea* flowers, *Elettaria cardamom, Zingiber officinale, Glycyrrhiza glabra, Piper longum* and honey reversed the liver damage induced by $CCl4$ in experimental rats.

9203-1648 Shukla, B., Visen, P.K.S., Patnaik, G.K., Dhawan, B.N.* (ICMR Centre for Advanced Pharmacological Research on Traditional Remedies, Central Drug Research Institute, Lucknow 226001, UP, India) **Reversal of thioacetamide induced cholestasis by Picroliv in rodents.** *Phytotherapy Research,* v. 6(1):p. 53-55, 1992 (11 ref, Eng).

Thioacetamide (100 and 200 mg/kg s.c. reduced the volume of bile secretion by 33.1-50.6 percent and this was accompanied by a reduction in bile acids (31-54 percent) and bile salts (60-61 percent) in conscious rats and anaesthetized guinea-pigs. A significant reversal of these effects was achieved by pretreatment with Picroliv, the hepatoprotective principle of *Picrorhiza kurrooa,* in a dose dependent manner against thioacetamide-induced cholestasis. Picrolive was found to be more active than silymarin in both experimental models of cholestasis.

9203-1649 Singh, M.(University of Mysore, Mysore 570 006, Karnataka, India) **Acorus calamus, an Indian medicinal plant: Its effect on escape avoidance learning and general, activity in albino rat.** *Journal of Scientific Research in Plants & Medicines* , v. 10(1-4): p. 34-44, 1989 ((Recd.1991); 14 ref, Eng).

A study was conducted to investigate the effects of a plant medicine, Vacha *A.calamus* on escape/avoidance conditioning and general motor activity of rats. A pilot study determined the optimal dose (crude root powder) for rats to be 4 mgs/gm of body weight. The investigation was continued for four generations. Vacha enhanced learning performance, especially in the females, whereas the effect of the drug on general activity was non-significant. The performance of the descendents of drug-administered animals, and the animals themselves given drug, continued to enhance. A case of maternal cytoplasmic inheritance is suspected.

9203-1650 Slavik, J., Zackova, P., Opletal, L., Sovova, M., Kutilova, H., Navratilova, J. , Vondrickova, R.(Department of Pharmacology and Toxicology, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechoslovakia) **Cardiovascular effects of daphnoretin. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of the Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove.** *Folia Pharmaceutica Universitatis Carolinae*, v. 15, p. 103-104, 1989 (Eng).

Daphnoretin (isolated from the seeds of *C.varia*) negatively affected the contractility of the guinea pig heart only in the concentrations of 50.0 and 100.00 mg/l without any substantial changes in the minute flow and heart rate. In the chick myocardium there occured a temporary decrease in heart rate after the concentrations of 1000.00 and 1500.00 mg/l and an occurrence of arrhythmias during the total period of the experiment was observed only after the concentration of 1500 mg/l. Increasing the concentration of daphnoretin in combination with hyrcanoside caused potentiation of the contraction produced by hyrcanoside.

9203-1651 Sovova, M., Opletal, L., Hanus, V.L.(Department of Pharmaceutical Botany and Ecology, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechoslovakia) **Coronilla varia L. History of the research and its present-day state at the faculty of pharmacy, Charles University, Hradec Kralove. (Abstract of paper presented at symposium on prospects of therapeutical and economic use of the crown vetch (Coronilia varia L.) on June 22 1989, at Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 98-99, 1989 (3 ref, Eng).

Cardiovascular activity of hyrcanoside, deglucohyrcanoside and (-)-epicatechin isolated from the seeds of *C.varia* has been reported.

9203-1652 Srivastava, R.D., Dwivedi, S. , Sreenivasan, K.K., Chandrashekhar, C.N.(Kasturba Medical College and College of Pharmacy, Manipal 576119, Karnataka, India) **Cardiovascular effects of Terminalia species of plants.** *Indian Drugs*, v. 29(4): p. 144-149, 1992 (8 ref, Eng).

Cardiovascular effects of alcoholic extracts of *Terminalia chebula, T.bellerica* and *T.arjuna* were studied both *in vivo* and *in vitro*, using isolated frog and rat atria, perfused frog and rabbit hearts, isolated rabbit aortic rings and in dogs. All plant extracts exerted a negative chrono and inotropism and hypotensive effects of varying magnitude in a dose dependent fashion. The myocardial depression was easily reversible by washout *in vitro* preparations. There was no evidence of tachyphylaxis. In rat atria the potency order was T.chebula T.bellerica T.arjuna. The hypotensive response to these extracts was abolished by prior atrophinisation suggesting a muscarinic action on the heart. The vascular smooth muscle (aortic ring) contracted by adrenaline could not be relaxed by these agents, thus ruling out adrenolytic action.

9203-1653 Sugaya, A., Suzuki, T., Sugaya, E. , Yuyama, N., Yasuda, K., Tsuda, T.(Faculty of Pharmaceutical Sciences, Josai University, 1-1 Keyakidai, Sakado-Shi, Sakado, Saitama 350-02, Japan) **Inhibitory effect of peony root extract on pentylenetetrazol-induced EEG power spectrum changes and extracellular calcium concentation changes in rat cerebral cortex.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 159-167 , 1991 (29 ref, Eng).

Water extract of peony roots (*Paeonia lactiflora* var.*trichocarpa*), albiflorin and pentagalloyl glucose given orally, completely inhibited the EEG power spectrum changes as well as the extracellular calcium and potassium concentration changes related to seizure activity. The water/acetone and methanol extracts and paeoniflorin were relatively less potent. NML, New Delhi.

9203-1654 Sukumar, E., Gopal, R.H., Rao, R.B. , Kundu, A.B.*, Viswanthan, S. , Thirugnanasambandam, P., Gopalakrishnan, C.(Captain Srinivasa Murti Drug Research Institute for Ayurveda (CCRAS), Arumbakkam, Madras 600 106, TN, India) **Pharmacological investigations on Pristimera grahamii leaves.** *Fitoterapia*, v. 62(5): p. 429-433, 1991 (11 ref, Eng).

P.grahamii is a folk remedy for a variety of diseases used by the hill tribes of Maharashtra in India. The chloroform extract of the leaves was screened for related activities exhibited good analgesic activity in mice via non-opioid pathway and significant anti-inflammatory activity in acute and chronic models. It did not show any antipyretic activity in rabbits and there was no acute toxicity in mice upto an oral dose of 2 g/kg. The extract further showed a mild activity against a few gram positive organisms. Either one or a combination of the friedelane triterpenoids which constitute a major percentage of the secondary metabolites present in the extract have been suggested to be responsible for the above activities.

9203-1655 Sun, X.B., Matsumoto, T., Kiyohara, H., Hirano, M., Yamada, H.*(Oriental Medicine Research Centre of the Kitasaton Institute, 5-9-1 Shirokane, Minato-ku, Tokyo 108, Japan) **Cytoprotective activity of pectic polysaccharides from the root of Panax ginseng.** *Journal of Ethnopharmacology*, v. 31: p. 101-107, 1991 (12 ref, Eng).

An acidic polysaccharide fraction, GRA-4, of the root extract of *P.ginseng*, when administered to male mice from

50 to 200 mg/kg orally; inhibited gastric lesions induced by HCl-ethanol or absolute ethanol, in a dose dependent manner. The carbohydrate moiety of this polysaccharide contributes to this activity. NML, New Delhi.

9203-1656 Takeuchi, N., Kasama, T., Aida, Y. , Oki, J., Maruyama, I., Watanabe, K. , Tobinaga, S.*(Showa College of Pharmaceutical Sciences, Machida, Tokyo 194, Japan) **Pharmacological activities of the prenylcoumarins, developed from folk usage as a medicine of Peucedanum japonicum Thunb..** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1415-1421, 1991 (17 ref, Eng).

Coumarins 1 and 2 were isolated from the ether extracts of the roots of *P.japonicum* and methanol extracts of *P.praeruptorum*. The relationships between the folk usage of this plant as a medicine and the pharmacological activities of coumarin 2 were investigated and compared the pharmacological activities of coumarin 1 with those of coumarin 2. Results are discussed.

9203-1657 Tanigami, Y., Kusumoto, S., Nagao, S., Kokeguchi, S., Kato, K., Kotani, S. , Shiba, T.(Department of Chemistry, Faculty of Science, Osaka University, Toyonaka, Osaka 560, Japan) **Partial degradation and biological activities of an antitumor polysaccharide from rice bran.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1782-1787, 1991 (21 ref, Eng).

A rice bran polysaccharide designated RON was subjected either to partial hydrolysis with formic acid or to partial degradation by ultrasonic irradiation. A significant change in the molecular size was also observed during simple chromatography of RON on a strongly acidic ion exchange resin, although the apparent molecular weight of RON had been assumed to be more than 1x106 daltons (Da). This fact indicates that RON exists as molecular aggregates, presumably mediated by metal cations. Degradation products with average molecular weighta above ca. 1x104 Da which were obtained by any of the three methods still retained the following activities of RON: in vivo antitumor activity against Meth-A fibrosarcoma in mice by oral administration, and in vitro macrophage stimulatory effects to induce tumoricidal activity and interleukin I production. This molecular size was proven to be the minimum requisite for these activities because smaller fragments were scarcely active. The aggregation was characteristic of RON but not essential for its antitumor activity because definite, though slightly reduced, activity was exhibited even by the smaller fragments obtained after the ion exchange resin treatment.

9203-1658 Terencio, M.C., Sanz, M.J., Paya, M.*(Farmacognosia y Farmacodinamia, Departamento de Farmacologia y Farmacotecnia, Facultad de Farmacia, Universitat de Vallencia Avda Blasco Ibanez 13,46010-Valencia, Spain) **Antihypertensive action of procyanidin glycoside from Rhamnus lycioides.** *Journal of Ethnopharmacology*, v. 31: p. 109-114, 1991 (9 ref, Eng).

The antihypertensive action of a procyanidin glycoside isolated from *R.lycioides* aerial parts was studied in spontaneously and renal hypertensive rats. This compound, like 20 microg/kg i.v. captopril, produced a very clear *in vivo* inhibition of angiotension I converting enzyme when given at a dose of 3 mg/kg i.v. NML, New Delhi.

9203-1659 Thabrew, M.I., de Silva, K.T.D. , Labadie, R.P., de Bie, P.A.F., Vander Berg, B.(Department of Biochemistry, Faculty of Medicine, University of Ruhuna, Galle, 8 Sri Lanka) **Immunomodulatory activity of three Sri Lankan medicinal plants used in hepatic disorders.** *journal of Ethnopharmacology*, v. 33(1-2): p. 63-66 , 1991 (16 ref, Eng).

Aqueous extracts of *Osbeckia octandra* whole plant, *Melothrina maderaopatana* whole and *Phyllanthus debelis* leaves showed strong anticomplement effects on both the classical and alternate pathways of the human complement system *in vitro*. The effects were dose dependent and more pronounced in the classical complement pathway assay. NML, New Delhi.

9203-1660 Tomoda, M., Shimizu, N., Ohara, N. , Gonda, R., Ishii, S., Otsuki, H.(Kyoritsu College of Pharmacy, Shibakoen, Minato-ku, Tokyo 105, Japan) **A reticuloendothelial system-activating glycan from the roots of Astragalus membranaceus.** *Phytochemistry*, v. 31(1): p. 63-66, 1992 (26 ref, Eng).

From the hot water extract of the roots of *A.membranaceus*, a glycan, designated as AMem-P, has been isolated by treatment with acetyltrimethylammonium bromide followed by column chromatography on Toyopearl HW60F and Con A-Sepharose columns. Chemical and spectroscopic studies established that the glycan possesses mainly alpha-1,2-linked L-rhamno-alpha-1,4-linked D-galacturonan structure. Terminal and alpha-1,5-linked L-arabinofuranose, terminal, beta-1,3-, beta-1,4- and beta-1,6-linked and 3,6-branched D-galactose, and 2,4-branched L-rhamnose residues were also identified as the component sugar units. The glycan showed remarkable reticuloendothelial system-potentiating activity in the carbon clearance test.

9203-1661 Tomoda, M., Takada, K., Shimizu, N. , Gonda, R., Ohara, O.(Kyoritsu College of Pharmacy, Shibakoen, Minato-ku, Tokyo 105, Japan) **Reticuloendothelial system-potentiating and alkaline phosphatase-inducing activities of Plantago mucilage A, the main mucilage from the seed of Plantago asiatica, and its five modifica-**

tion products. *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2068-2071, 1991 (28 ref, Eng).

Five kinds of chemically modified products were prepared from *Plantago*mucilage A,the representiative mucous polysaccharide isolated from the seed of *P.asiatica*, and their reticuloendothelial system-potentiating and alkaline phosphatase-inducing activities have been investigated. Both activities were markedly enhanced when the mucilage was de-O-acetylated. The proucts obtained by periodate oxidation, controlled Smith degradation, and partial acid hydrolysis under the two conditions were not effective. Structural features of the partial hydrolyzates were elucidated, and it was shown that these products lost all O-acetyl groups, all xylose branches and many hexuronosyl arabinose side chains.

9203-1662 Toukairin, T., Uchino, K.*, Iwamoto, M., Murakami, S., Tatebayashi, T., Ogawara, H., Tonosaki, Y.(Central Laboratory, Nippon Flour Mills Co., Ltd., 2114-2, Nurumizu, Atsugi, Kanagawa 243, Japan) **New polyphenolic 5'-nucleotidase inhibitors isolated from the wine grape "Koshu" and their biological effects.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1480-1483, 1991 (8 ref, Eng).

New 5'-nucleotidase inhibitors designated as NPF-88BU-IA, NPF-88BU-IB, NPF-88BU-IIA and NPF-88BU-IIB, respectively, were isolated from the seeds and skin of the wine grape "Koshu" (*Vitis vinifera*).They were purified by solvent extraction, dialysis, and reversed-phase high performance liquid chromatography. Their physico-chemical properties revealed these compounds to be polyphenolic substances. The average relative molecular masses of the four were estimated by gel permeation chromatography analysis to be 7850,5950,11900, and 11300, respectively. They strongly inhibited 5'-nucleotidase activities from snake venom and rat liver membrane, and displayed significant therapeutic activity against Ehrlich ascites carcinoma. They also showed inhibitory effects on the growth of *Streptococcus mutans*MT148(c), a primary cariogenic bacterium. Furthermore, these 5'-nucleotidase inhibitors inhibited the glucan formation from sucrose. These results suggest that the 5'-nucleotidase inhibitors can prevent the cause of caries of tooth.

9203-1663 Toyokawa, S., Takeda, T., Kato, Y. , Wakabayashi, K., Ogihara, Y.*(Faculty of Pharmaceutical Sciences, Nagaoya City University, Tanabe-dori, Mizuho-ku, Nagoya 467, Japan) **Presence of protein polymorphism in karasurin, an abortifacient and antitumor protein, identified with physicochemical properties.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2132-2134, 1991 (17 ref, Eng).

Karasurin is an abortifacient plant protein isolated from fresh root tubers of *Trichosanthes kirilowii* var.*japonicum*. This study describes the presence of protein polymorphism in karasurin (karasurin-A and karasurin-B) separated by ion-exchange chromatography. Two components showed no differences in the molecular weight (ca.28000), the amino acid composition, the neutral sugar content and part of the amino acid sequence. A unique difference was observed in their isoelectric points (10.1 for karasurin-A and 10.2 for karasurin-B). However, modifications of glycosylation or phosphorylation were not found. Biological assays for inducing mid-term abortion in pregnant mice and inhibition of the growth of BeWo cells gave no significant differences between them. The presence of protein polymorphism in karasurin, whose biological sgnificance is not yet understood, is a first finding among several abortifacient proteins.

9203-1664 Varalakshmi, P., Latha, E., Shamila, Y., Jayanthi, S. (Department of Medical Biochemistry, Postgraduate Institute of basic Medical Sciences, Madras University, Taramani, Madras 600 113, TN, India) **Effect of Crataeva nurvala on the biochemistry of the small intestinal tract of normal and stone-forming rats.** *Journal of Ethnopharmacology*, v. 31: p. 67-73, 1991 (29 ref, Eng).

Treatment with *C.nurvala* bark decoction lowered levels of small intestinal (Na+,K+)-ATPases in rats. The action of decoction on the small intestinal tract seems to be mediated through (Na+,K+)-ATPases, which in turn may affect the transfort of metabolites. NML, New Delhi.

9203-1665 Varghese, C.D., Nair, S.C. , Panikkar, K.R.(Amla Cancer Research Centre, Amlanagar, Trichur 680553, Kerala, India) **Potential anticancer activity of Saraca asoca extracts towards transplantable tumours in mice.** *Indian Journal of Pharmaceutical Sciences*, v. 54(1): p. 37-40, 1992 (7 ref, Eng).

S.asoca flowers extract administered orally indicated 50 percent in vitro cytotoxicity in Dalton's lymphoma ascites and Sarcoma-180 tumour cells at a concentration of 38 micro g and 54 micro g respectively, with no activity against normal lymphocytes but preferential activity for lymphocytes derived from leukemia patients.

9203-1666 Vedavathy, S., Rao, K.N.(Medicinal Plant Research Laboratory, Department of Botany, Sri Venkateswara University, Tirupati 517 502, AP, India) **antipyretic activity of six indigenous medicinal plants of Tirumala Hills, AP, India.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 193-196 , 1991 (13 ref, Eng).

Of six plants tested, ethanolic extracts of *Andrographis paniculata, Tinospora cordifolia* and

Solanum surattense exhibited significant antipyretic activity in experimental rats. Antipyretic effects shown by extracts of *Cassia auriculata, Cyperus rotundus* and *Aristolochia indica* were not significant. NML, New Delhi.

9203-1667 Venkateswara Rao, R., Vaidynathan, C.S.*(Department of Biochemistry, Indian Institute of Sciences, Bangalore 560 012, Karnataka, India) **Chemistry and biochemical pharmacology of cardiac glycosides- a review.** *Journal of the Indian Institute of Science*, v. 71(4): p. 329-364, 1991 (147 ref, Eng).

Chemistry and pharmacology of cardiac glycosides derived from plants, have been reviewed under the following subheadings: natural sources of cardiac glycosides (families Apocynaceae, Cruciferae, Sterculiaceae, Leguminosae, Asclepiadeceae, Celastraceae, Ranunculaceae, Tiliaceae, Liliaceae, Scrophulariaceae and Moraceae), chemical nature of cardiac glycosides, biogenesis of cardiac glycosides, structure-activity relationships, cardiac glycosides and positive inotropy, cardiac glycosides and their receptors, and contrary views on the mode of action of cardiac glycosides.

9203-1668 Wang, J.D., Narui, T., Yoshikawa, K., Arihara, S., Okuyama, T.*(Department of Pharmacognosy and Phytochemistry, Meiji College of Pharmacy, 1-35-23 Nozawa, Setagaya-ku, Tokyo 154, Japan) **Hematological studies on naturally occurring substances (Part V) Studies on the anti-platelet aggregative, anti-blood coagulative and fibrinolytic promotive saponins of Luffa cylindrica Roem.** *Shoyakugaku Zasshi*, v. 45(3): p. 215-219, 1991 (15 ref, Eng).

Several parts of *L.cylindrica* plants were tested for their fibrinolytic activities by the fibrin plate method with some modification. The water extract of the seeds showed the strongest activity. Many new and known saponins isolated from this plant were also tested for their effects on blood coagulation, fibrinolysis and platelet aggregation.

9203-1669 Yamada, H. , Nagai, T., Cyong, J.C. , Otsuka, Y. (Oriental Medicine Research Center of the Kitasato Institute, 5-9-1, Shirokane, Minato-ku, Tokyo 108, Japan) **Mode of complement activation by acidic heteroglycans from the leaves of Artemisia princeps Pamp.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2077-2081, 1991 (35 ref, Eng).

The anti-complementary activities of AAF-IIb-2 and IIb and IIb-3 acidic heteroglycans, purified from the leaves of *A.princeps*) were reduced partially in the absence of Ca2+ions. A marked consumption of C4 was observed to have occurred when serum was incubated with both the polysaccharides in the presence of Ca2+ions. AAF-IIb-2 showed more potent C4 consumption than IIb-3. After the incubation of the serum with AAF-IIb-2 in the absence of Ca2+ions, a cleavage of C3 in the serum was detected by immunoelectrophoresis. AAF-IIb-2 showed more significant consumption of the complement than IIb-3 when rabbit erythrocytes were used in the assay system in the absence of Ca2+ions. These results indicate that AAF-IIb-2 activates the complement via both the alternative and classical pathways, whereas IIb-3 mainly activates the complement via the classical pathway. The absorption of serum with Protein A-Sepharose results in a decrease of the activity of AAF-IIb-2 and IIb-3. However, the decrease of the activity was restored by the replacement of the immunoglobulin G (IgG) fraction after its recovery from the Protein A-Sepharose. These results suggest that IgG dependent mechanisms are both involved in the anti-complementary activity of AAF-II2-2 and IIb-3.

9203-1670 Yamahara, J., Kobayashi, M. , Matsuda, H., Aoki, S. (Kyoto Pharmaceutical University, Misasagi Yamashina-ku. Kyoto 607, Japan) **Anticholinergic action of Swertia japonica and an active constituent.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 31-35 , 1991 (1 ref, Eng).

Methanol extract of *S.japonica* whole plant was found to be an effective anticholinergic when given orally to experimental rats. Swertiamarin found in the methanol extract(30 percent), has been reported as an active constituent with an anticholinergic activity. NML, New Delhi.

9203-1671 Yasukawa, K., Takido, M., Ikekawa, T., Shimada, F., Takeuchi, M., Nakagawa, S.(College of Pharmacy, Nihon University, Narashinodai, Funabashi-shi, Chiba 274, Japan) **Relative inhibitory activity of berberine-type alkaloids against 12-O-tetradecanoylphorbol-13-acetate-induced inflammation in mice.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1462-1465, 1991 (20 ref, Eng).

Forty eight derivatives of berberine-type alkaloids were examined for their inhibition activity against the induction of edema on mouse ear by application of 12-O-tetradecanoylphorbol-13-acetate (TPA). Berberine had an inhibitory effect against TPA-induced ear edema at a grade corresponding to those of quercetin, caffeine and cepharanthine. Berberine derivatives had stronger inhibitory activity than palmatine derivatives. 9-N,N-Diphenylcarbamoyl derivatives of both 9-demethylberberine and 9-demethylpalmatine had rather strong activity. These inhibitory activities are about ten times the activity of the respective mother compounds. Furthermore, 9-N-monophenylcarbamoyl derivatives and N,N-diphenylcarbamoyl chloride are found to have no effect.

9203-1672 Zackova, P., Slavik, J., Opletal, L., Sovova, M., Michlova, J., Vandrickova, R.(Department of Pharmacology and Toxicology, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechoslovakia) **Cardiovascular effects of hyrcanoside. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of the Crown Vetch (Caronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove.** *Folia Pharmaceutica Universitatis Carolinae*, v. 15, p. 104-105, 1989 (Eng).

Hyrcanoside (a constituent of *C.varia* seeds), in a concentration of 3 mg/l of the perfusion solution and in the single dose of 100 and 200 micro g/kg *in situ* produced an immediate very intensive increase in the contractility of the myocardium to 130 percent in the isolated heart and to 170 and 187 percent *in situ*. The strong cardiotonic effect in the *in situ* guinea-pig stabilized on 120 percent of the initial value in a few minutes. A transient increase in the systolic blood pressure was also observed. The onset of the cardiotonic effect was more rapid in hyrcanoside than in digoxin. Toxicity of hyrcanoside has been compared with that of digoxin or onabain.

9203-1673 Zanini, J.C., Medeiros, Y.S., Cruz, A.B., Yunes, R.R.A., Calixto, J.B.(Department of Pharmacology, Universidade Federal de Santa Catarina 88049, Florianopolis, SC, Brazil) **Action of compounds from Mandevilla velutina on croton oil-induced ear oedema in mice. A comparative study with steroidal and nonsteroidal antiinflammatory drugs.** *Phytotherapy Research*, v. 6: p. 1-5, 1992 (20 ref, Eng).

The antioedematogenic activity of two natural pregnane compounds from *M.velutina* was evaluated against croton oil-induced ear oedema in mice. For comparison the effects of nonsteroidal (indomethacin), phenidone and BW 755C) and steroidal (dexamethasone) antiinflammatory drugs were analysed. The purified compounds from *M.velutina* MV8612 (3 and 30 mg/kg, i.p) and to a lesser extent MV8608 (30 and 100 mg/kg; i.p.), given 30 min prior to the croton oil, significantly inhibited this oedema, maximal inhibition (MI) of 53 percent and 26 percent, respectively. However, given orally 180 min. after, neither compound had any effect. Compound MV8612 but not MV8606 (200-600 microg/ear) given 180 min after the irritant significantly inhibited croton oil-induced oedema, M1 of 29 percent. The results indicate that the natural compounds MV8612 and to a lesser extent MV8608 isolated from *M.velutina*, besides their antibradykinin activity, exhibited both topical and systemic-long-lasting antioedematogenic effects against croton oil-induced ear oedema in mice.

9203-1674 Zhang, S.S., Zhang, D.S., Zhu, T.J. , Chen, X.Y. (Department of Pharmacology, Wenzhou Medical College, Wenzhou 325003, China) **A pharmacological analysis of the amino acid components of Cordyceps sinensis Sacc..** *Acta Pharmaceutica Sinica*, v. 26(5): p. 326-330, 1991 (7 ref, Eng).

An artificial complex of amino acids (CI) was made by mixing 18 synthetic amino acids, according to the kinds and contents the amino acid contained in the natural *C.sinensis*. It showed the same sedative action as the natural *C.sinensis* as indicated by the spontaneous activity inhibition in mice (photocell method). However, the action of commercial complex amino acid injection (12 X, total amino acid components are similar to C I) was more attenuated than that of C I. Comparing amino acid components of 12X with C I, the latter was found to contain 5 times as much glutamic acid, tryptophan and tyrosine as those of 12 X. Another artificial amino acid complex (C II) consisting of the above mentioned 3 amino acids, also showed the same sedative action. This suggests that tryptophan is the principal component responsible for sedative activity. However, C II did not enhance the phagocytic action of mononucleophagocyte as the natural *C.sinensis* did in the clear rate test of carbon granule from mice.

9203-1675 Zheng, G.Q., Kenny, P.M., Lam, L.K.T(LKT Laboratories Inc., 2010 East Hannepin Avenue, Minneapolis, Minnesota 55413, USA) **Myristicin: A potential cancer chemopreventive agent from parsley leaf oil.** *Journal of Agricultural and Food Chemistry*, v. 40(1): p. 107-110, 1992 (23 ref, Eng).

Bioassay-directed fractionation of leaf oil (Petroselinum sativum) yielded an active compounds myristicin. It has the ability to induce increased activity of detoxifying enzyme system glutathione-5-transferase in several mouth target tissues. Myristicin showed high activity as GST-inducer in the liver and small intestinal mucosa. Since, the ability to induce an increase in the detoxifying enzyme activity by anticarcinogenic natural products has been found to correlate with their activity in the inhibition of tumorigenesis, myristicin may be considered a potential chemopreventive agent.

Antimicrobial Activity

9203-1676 Adebajo, A.C., Al Adesanmi, A.J. , Oloke, K.(Department of Pharmacognosy, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria) **Antimicrobial activity of Laportea aestuans.** *Fitoterapia*, v. 62(6): p. 504-505, 1991 (3 ref, Eng).

Methanol extract of *L.aestuans* aerial parts, showed positive antimicrobial activity against seven microorganisms.

9203-1677 Adebajo, A.C., Al Adesanmi, A.J. , Oloke, K.(Department of Pharmacognosy, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Osun State, Nigera) **Antimicrobial activity of Phelline comosa heartwood.** *Fitoterapia*, v. 62(6): p. 505-507, 1991 (4 ref, Eng).

n-Hexane, ethyl acetate and methanol extract of *P.comosa* dried heartwood exhibited antimicrobial activity against five microorganisms.

9203-1678 Aliotta, G., Molinaro, A., Monaco, P., Pinto, G., Previtera, P.(Dipartimento di Biologia Vegetale, Via Foria 223, I-80139 Naples, Italy) **Three biologically active phenylpropanoid glucosides from Myriophyllum verticillatum.** *Phytochemistry*, v. 31(1): p. 109-111, 1992 (15 ref, Eng).

Three novel phenylpropanoid glucosides have been isolated from a methanolic extract of *M.verticillatum* and their structures defined by spectroscopic methods and chemical degradations. The biological activity of these compounds on the cyanobacterium Synechococcus leopoliensis has been investigated.

9203-1679 Bandara, B.M.R., Hewage, C.M. , Jayamanne, D.H.L.W., Adikaram, N.K.B. , Bandara, K.A.N.P., Pinto, M.R.M. , Wijesundara, D.S.A (Department of Chemistry, University of Peradeniya, Peradeniya, Sri Lanka) **Biological activity of some steam distillates from leaves of ten species of Rutaceous plants.** *Journal of National Science Council of Sri Lanka*, v. 18(1): p. 71-77, 1990 (17 ref, Eng).

Some steam distillates collected from leaves of ten Rutaceous plants by simple steam distillation method have been investigated for antimicrobial and insecticidal activity. *Murraya paniculata, Toddalia asiatica, Limonia acidissima* and *Glycosmis pentaphylla* have shown significant antifungal activity against *Cladosporium cladosporioides*. High antibacterial activity was displayed by *L.acidissima* and *M.paniculata* against *Staphyloccus aureus, Atlantia monophylla* and *Acronycbia pedunculata* caused significant mortality of the aphid,.

9203-1680 Barel, S., Segal, R., Yashphe, J.(Department of Bacteriology, Faculty of Medicine, School of Pharmacy, The Hebrew University, Jerusalem, Israel) **The antimicrobial activity of the essential oil from Achillea fragrantissima.** *journal of Ethnopharmacology*, v. 33(1-2); p. 187-191 , 1991 (5 ref, Eng).

Essential oil from *A.fragrantissima* exerted a bactericidal activity on several gram positive and gram nnegetive bacterial streins, as well as on *Candida albicans*. Two fractions which contained less polar compounds were active against *C.albicans* only. The fractions with more polar compounds inhibited the growth of all the microorganisms tested. One of these compounds was identified as terpinen-4-ol. NML, New Delhi.

9203-1681 Brian, Y.Y., Wong, B.Y.Y., Lau, B.H.S., Teel, R.W. (Department of Natural Science, Graduate School, Loma Linda University, Loma Linda, CA 92350, USA) **Chinese medicinal herbs modulate mutagenesis, DNA binding and metabolism of benzo{a}pyrene.** *Phytotherapy Research*, v. 6(1): p.10-14, 1992 (26 ref, Eng).

Oldenlandia diffusa(OD) and *Scutellaria barbata*(SB) have been used in traditional Chinese medicine for treating liver, lung and rectal tumours while *Astragalus membranaceus*(AM) and *Ligustrum lucidum*(LL) are often used as an adjunct in cancer therapy. The effects of aqueous extracts of these herbs on benzo{a}pyrene (BaP)-induced mutagenesis using Salmonella typhimurium TA 100 as the bacterial tester strain and rat liver 9000xg supernatant as the metabolic activation system were studied. The effects of these herbs on {3H}BapP binding to calf thymus DNA and formation of BaP-DNA adducts were assessed. Mutagenesis assays revealed that all four herbs produced a significant concentration-dependent inhibition of His+ revertants induced by BaP. At a concentration of 1.5 mg/plate, SB and OD in combination exhibited an additive effect, whereas AM and LL in combination demonstrated an antagonistic effect. The trend of inhibition of these four herbs on BaP-induced mutagenesis was:SBLLODAM. LL, OD and SB significantly inhibited BaP binding to DNA. LL and SB significantly reduced BaP-DNA adduct formation and SB significantly decreased formation of organosoluble metabolites of BaP. It is suggested that these Chinese medicinal herbs possess cancer chemopreventive properties.

9203-1682 Caceres, A., Alvarey, A.V., Ovando, A.E., Samayoa, B.E. (Center for Mesoamerican Studies on Appropriate Technology (CEMAT), P O Box 1160, Guatemala) **Plants used in Guatemala for the treatment of respiratory diseases.1. Screening of 68 plants against gram-positvie bacteria.** *Journal of Ethnopharmacology*, v. 31: p. 193-208, 1991 (48 ref, Eng).

Out of 68 plants screened for their activity against *Staphylococcus aureus, Streptococcus pneumoniae* and S.pyogenes, 28 inhibited the growth of one or more of the bacteria tested. *S.aureus* was inhibited by 18 of the plant extracts, while 7 extracts were effective against *S.pyogenes*. NML, New Delhi.

9203-1683 Chhabra, S.C., Uiso, F.C.(Chemistry Department, Kenyatta University, P.O. Box 43844, Nairobi, Kenya) **Antibacterial activity of some Tanzanian plants used in traditional medicine.** *Fitoterapia*, v. 62(6): p. 499-503, 1991 (5 ref, Eng).

Of thirty one plants screened, *Acacia xanthophloea, Maytenus senegalensis* and *Dracaena deremensis* showed the highest antimicrobial activity. *A.xanthophloea, Lannea stuchlmannii, Maprounea africana* and *Ricinus communis* showed activity against *Psendomonas aeruginosa*, while *A.xanthophloea* exhibited activity against *Salmonella oranienburg.*

9203-1684 Coulombie, F.C. , Andrei, G.M. , Laguens, R.P., de Torres, R.A., Coto, C.E.(Laboratory of Virology, Faculty of Science, University of Buenos Aires, Argentina) **Partially purified leaf extracts of Melia azedarach L. inhibit Tacaribe virus growth in neonatal mice.** *PhytotherapyResearch*, v. 6(1):p. 15-19, 1992 (23 ref, Eng).

Neonatal mice, inoculated intraperitoneally with 103 PFU of Tacaribe virus, died developing a typical encephalitis. The adminis- tration of partially purified extracts of *M.azedarach* (Ma) fresh green leaves, in seven doses by the same route, reduced virus spread which normally involves the kidneys, liver and brain. Mortality fell to 50 percent in treated mice and viral titres in brain were at least 3 logs lower than those of untreated mice. Surviving mice mounted a humoral response. High levels of neutralizing antibodies were present upto 60 days post-infection when the animals were killed. Ma administration exerts a marked decrease in circulating interferon levels of infected mice. Thus, at day 6 post-infection the amount of acid resistant interferon in treated animals was eight times lower than in those untreated. The antiviral effect of Ma in vivo is clearly stated in this murine-arenavirus model.

9203-1685 De Morafs, M.A., Souza, E., Bieber, L.W., De Mello, J.F. , Cavalcanti, M.S.B., Da Silva Filho, A.A., Do Nascimento, S.C. (Departmento de Antibioticos, Universidade Federal de Pernambuco, 50.739 Recife-PE, Brazil) **Antimicrobial activity of Indigofera microcarpa benzofurans.** *Fitoterapia*, v. 62(6): p. 514-516, 1991 (3 ref, Eng).

Benzofurans viz., 2-(2'-hydroxy-4'-methoxyphenyl)-3-methyl-6-methoxybenzo{b} furan and 2-(2'-hydroxy-4'-methexyphenyl)-3-methyl-5,6-dioxyme thylenebenzo{b} furan isolated from *I.microcarpa* leaves exhibited antimicrobial activity.

9203-1686 Dimayuga, R.E., Garcia, S.K. , Nielsen, P.H.*, Christopharsen, C.(Marine chemistry Section, The HC Qrsted Institute, University of Copenhagen, Universitetsparken 5, DK 2100 Copenhagen, Denmark) **Traditional medicine of Baja California Sur (Mexico) III. Carnosol: A diterpene antibiotic from Lepechinia hastata.** *Journal of Ethnopharmacology*, v. 31: p. 43-46, 1991 (20 ref, Eng).

L.hastat, used as a remedy against uterine infections in Baja California Sur(Mexico), has been shown to contain carnosol (in aerial parts) as the main diterpenoid secondary metabolite. Carnosol has a potent *in vitro* antimicrobial actity. NML, New Delhi.

9203-1687 Dimayuga, R.E., Garcia, S.K.(Universidad Autonoma de Baja California Sur, Departamento de Biologia Marina, Apartado Postal 19-B, La Paz, Baja California Sur 23080, Mexico) **Antimicrobial screening of medicinal plants from Baja California Sur, Mexico.** *Journal of Ethnopharmacology*, v. 31: p. 181-192, 1991 (13 ref, Eng).

The ethanolic extracts of 72 plants belonging to 35 families, and used in traditional medicine in Baja California Sur (Mexico), were tested for antimicrobial activity *in vitro* using the filter paper disk assay method. *Lippia palmeri* has been found to be active against all the test organisms, including *Candida albican*. NML, New Delhi.

9203-1688 El-Ballal, A.S., Ouda, H.E. , El-Hawary, S.A.(Genetics and Cytology, Laboratories, National Research Centre, Dokki, Cairo, Egypt) **Phytotherapeutic value as basis for selection in caraway (Carum carvi, L.).** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 9-18, 1991 (20 ref, Eng).

The study was conducted to correlate the effect of substituting genes controlling essential oil production, by altering the mating system, on the phytotherapeutic value of consequent monoterpene micro-constituents and antimicrobial activity of oil against *Salmonella typhimurium*. The proper breeding procedure for caraway *C.carvi* through germplasm rejuvenation was identified and results are discussed.

9203-1689 Goren, N., Bozok-Johansson, C.* , Jakupovic, J., Lin, L.J., Shieh, H.L. , Cordell, G.A., Celik, N.(TUBITAK, Marmara Research Center, Department of Chemistry, POB 21, 41470 Gebze-Kocaeli, Turkey) **Sesquiterpene lactones with antibacterial activity from Tanacetum densum subsp. sivasicum.** *Phytochemistry*, v. 31(1): p. 101-104, 1992 (23 ref, Eng).

The aerial parts of *T.densum* subsp. *sivasicum* yielded, in addition to known compounds, a new sesquiterpene lactone, sivasinolide which showed antibacterial activity against *Bacillus subtilis* and *Klebsiella pneumoniae.* The structures were elucidated by spectral methods. Some sesquiterpene lactones were evaluated for their cytotoxic activity.

9203-1690 Gundidza, M., Sibanda, M.(Department of Pharmacy, Faculty of Medicine, University of Zimbabwe, PO Box MP 167, Mount Pleasant, Harare, Zimbabwe) **Antimicrobial activities of Zizyphus abyssinica and Berchemia discolor.** *Central African Journal of Medicine*, v. 37(3): p. 80-83 , 1991 (7 ref, Eng).

Aqueous, petroleum ether, chloroform, dichloromethane and methanol extracts of the bark and leaves of both plants have been tested for their antimicrobial activity against *Staphylococus aureus*, *Escherichia coli* and *Candida albicans* using the hole plate diffusion and the test tube dilution methods. Both the aqeous and methanol extracts showed greatest overall antimicrobial activity. Bark extracts appear to be more potent than the leaf extracts particularly those from *Z.abyssinica. E.coli* is resistant to most of the extracts except those from the bark of *Z.abyssinica.*

9203-1691 Hayashi, K., Hayashi, T., Morita, N.(Department of Virology, Toyama Medical and Pharmacceutical University, Sugitani, Toyama 930-01, Japan) **Cytotoxic and Antitumour Activity of Scopadulcic Acid from Scoparia dulcis L.** *Phytotherapy Research, v. 6: p. 6-9,* 1992, 1992 (19 ref, Eng).

Scopadulcic acid B, a diterpenoid (isolated from *S.dulcis*) showed greater cytotoxicity against cell lines derived from tumour tissues with a 50 percent inhibitory concentration (IC50) of 0.068-0.076 microg/mL, compared with cell lines from normal tissues with an IC50 of 0.097-0.245 microg/mL. The in vivo antitumour activity of scopadulcic acid B was determined using mice inoculated with Ehrlich ascites tumour cells. Oral administration of the compound at doses of 25 or 100 mg/kg/day prolonged the median survival time of the animals. However, when administered intraperitoneally to mice at doses of 25, 50 or 100 mg/kg/day, scopadulcic acid B increased the survival rate by 12.5 percent and 25 percent respectively, without weight change over the treatment period.

9203-1692 Hufford, C.D., Badria, F.A. , Abou-Karam, M., Shier, W.T., Rogers, R.D.(Department of Pharmacognosy and Research Institute of Pharmaceutical Sciences, School of Pharmacy, University of Mississippi, University, Mississippi 38677, USA) **Preparation, characterization, and antiviral activity of microbial metabolites of stemodin.** *Journal of Natural Products*, v. 54(6): p. 1543-1552 , 1991 (13 ref, Eng).

Screening studies for microbial transformation products of stemodin (isolated from *Stemodia maritima*) have identified a number of microbial metabolites. Scale-up fermentation with *Rhizopus arrhizus* ATCC 11145 and *Streptomyces* sp. NRRL 5691 have resulted in the production of five metabolites that have been characterized with the use of 2D NMR and X-ray techniques. These metabolites have been identified as 18-hydroxystemodin, 16,18-dihydroxystemodin, 8beta-hydroxystemodin, 8beta,18-dihydroxystemodin, and 7beta,8beta-dihydroxystemodin. The antiviral activity and cytotoxicity of the isolated metabolites have been evaluated.

9203-1693 Inamori, Y., Baba, K., Tśujibo, H. , Taniguchi, M., Nakata, K., Kozawa, M.*(Osaka University of Pharmaceutical Sciences, Kawai, Matsubara-shi, Osaka 580, Japan) **Antibacterial activity of two chalcones, xanthoangelol and 4-hydroxyderricin, isolated from the root of Angelica keiskei Koidzumi.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1604-1605, 1991 (6 ref, Eng).

Two chalcones, xanthoangelol(I) and 4-hydroxyderricin(II), isolated from the root of *A.keiskei* showed antibacterial activity against gram-positive pathogenic bacteria. The activity of I on Micrococcus luteus IFO-12708 (minimum inhibitory concentration (MIC), 0.76 microg/ml) was the same potency as that of gentamicin, which is used as a standard. Although the activity of both chalcones on plant-pathogenic bacteria was lower than that of streptomycin sulfate, used as a postive control, they also exhibited growth-inhibitory effects. The antibacterial activity of I isolated being reported here for the first time. The growth-inhibitory effect of II on plant-pathogenic bacteria is also reported for the first time.

9203-1694 Kubo, I., Himejima, M., Muroi, H.(Division of Entomology and Parasitology, College of Natural Resources, University of California, Berkeley, California 94720, USA) **Antimicrobial activity of flavor components of cardamom Elattaria cardamomum (Zingiberaceae) seed.** *Journal of Agricultural and Food Chemistry*, v. 39(11): p. 1984-1986, 1991 (9 ref, Eng).

The antimicrobial activity of the 10 most abundant volatile components of the cardamom *E.cardamomum* seed has been tested against 14 microorganisms. All of the compounds tested exhibited activity against at least one or more microorganisms.

9203-1695 Kubo, I., Himejima, M.(Division of Entomology and Parasitology, College of Natural Resources, University of California, Berkeley, California, 94720, USA) **Anethole, a synergist of polygodial against Filamentous microorganisms.** *Journal of Agricultural and Food Chemistry*, v. 39(12): p. 2290-2292, 1991 (19 ref, Eng).

Anethole isolated as an antimicrobial principle from the seeds of *Pimpinella anisum*, was found to exhibit a synergistic effect on the antifungal activity of polygodial against Candida albicans and Saccharomyces cerevisiae..

9203-1696 Kubo, I. , Muroi, H., Himejima, M.(Division of Entomology and Parasitology, College of Natural Resources, University of California, Berkeley, California 94720, USA) **Antimicrobial activity of green tea flavor components and their combination effects.** *Journal of Agricultural and Food Chemistry*, v. 40(2): p. 245-248, 1992 (23 ref, Eng).

The antimicrobial activity of the 10 most abundant volatile components of green tea (*Camellia sinensis*) flavor was examined. The activity of each volatile was moderate but broad in spectrum. Most of the volatiles tested inhibited the growth of one of the most important cariogenic bacteria,, Streptococcus mutans. Among them, nerolidol was the most potent; linalool was the least effective. In addition, indole significantly enhanced the activity of gamma-cadinene and caryophyllene against S.mutans. These two sesquiterpene hydrocarbons also showed potent activity against a dermatomycotic bacterium, Propionibacterium acnes. Lastly, but most importantly, indole inhibited the growth of all of the Gram-negative bacteria tested, Pseudomonas aeruginosa, Enterobacter aerogenes, and Escherichia coli.

9203-1697 McChesney, J.D., Clark, A.M. , Silveira, E.R.* (Laboratorio de Produtos Naturais-UFCe, Department de Quimica Organica e Inorganica, Universidade Federal do Ceara, Fortaleza, CE 60.021 Brazil) **Antimicrobial diterpenes of Croton sonderianus, 1. Hardwickic and 3,4-secotrachylobanoic acids.** *Journal of Natural Products*, v. 54(6): p. 1625-1633 , 1991 (14 ref, Eng).

The hexane-extracted resin of the roots of *C.sonderianus* showed antimicrobial activity in standardized bioassays. Fractionation of the resin yielded two acidic diterpenes, (-)-hardwickic acid and the new 3,4-secotrachylobanoic acid as major bioactive materials.

9203-1698 Naqvi, S.A.H., Vohora, S.B., Khan, M.S.Y.(Faculty of Secience, Hamdard University, Hamdard Nagar, New Delhi 110 062, India) **Antibacterial, antifungal and anthelmintic studies of Artemisia scoparia.** *Herba Hungarica*, v. 30(3): p. 54-60, 1991 (15 ref, Eng).

Crude extracts of *A.scoparia* flowers exhibited moderate antibacterial activity against both Gram postive and Gram negetive organisms and marked antifungal activity against seven fungal cultures tested *in vitro*. Hexane extract (oil) exhibted good anthelmintic activity in addition to antimicrobial activity.

9203-1699 Ogunti, E.O., Aladesanmi, A.J. , Adesanya, S.A. (Department of Pharmacognosy, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Nigeria) **Antimicrobial activity of Cassia alata.** *Fitoterapia*, v. 62(6): p. 537-539, 1991 (10 ref, Eng).

Ethanolic extract of *C.alata* leaves exhibited antibacterial activity. The activity has been attributed to the presence of rhein and a non- anthraquinone active constituent.

9203-1700 Phillipson, J.D., Wright, C.W.(Department of Pharmacognosy, The School of Pharmacy University of London, 29-39 Brunswick Square, London WC1N 1AX, UK) **Antiprotozoal agents from plant sources.** *Planta Medica(Supplement)*, v. 57(7): p. S53-S59, 1991 (44 ref, Eng).

Protozoa are responsible for a number of serious tropical diseases including amoebiasis, leishmaniasis, malaria, and trypanosomiasis. New drugs are required for the treatment of these diseases and the potential of plants to produce new clinical agents is discussed.

9203-1701 Rajendra Prasad, Y.(Division of Organic Chemistry, Government (PG) College, Andhra University, Rajahmundry 533105, AP, India) **Chemical composition and antimicrobial efficacy of Atalantia oil.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.85*, Oct 21-23, 1991 (Eng).

The shade dried leaves of *Atalantia monophylla* gave a light brown, pleasant smelling volatile oil (0.5 percent). Chemical investigation of the oil supported by spectral data showed it to contain 1-sabinene (41.03 percent), 1-linalool (17.34 percent), 1-linalyl acetate (14.63 percent), d-limonene (8.02 percent), citral (1.34 percent), chamazulene (14.42 percent) and guaiol (3.22 percent). The oil was found to exhibit antibacterial and antifungal activities. (Abstr. No. BT-O2).

9203-1702 Rao, A., Baby, G.S.J.G., Rajendra Prasad, V.(Division of Organic Chemistry, Govt. (P.G.) College, Andhra University, Rajahmundry 533 105, AP, India) **Leaf oil of Coleus amboinicus Lour: The invitro antimicrobial studies.** *International Symposium on Newer Trends in Essen. Oils & Flavs, RRL Jammu, JK, India. p.84*, Oct. 21-23, 1991 (Eng).

The volatile leaf oil of *C.amboinicus* has been isolated and subjected to *in vitro* antimicrobial screening against pathogenic and non pathogenic fungi and gram positive and gram negative bacteria in pure form and at various dilutions. The results are compared with known fungicides and bactericides. (Abstr. No. BT-O1).

9203-1703 Rios, J.L., Recio, M.C., Villar, A.(Farmacognosia i Farmacodinamia, Departamento de Farmacologia i Farmacotecnia, Facultad de Farmacia, Universitat de Valencia, Avda Blasco Ibanez 13, 46010-Valencia, Spain) **Isolation and identification of the antibacterial compounds from Helichrysum stoechas.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 51-55 , 1991 (10 ref, Eng).

Fractionation of the dichloromethane extract of aerial parts of *H.stoechas* yielded seven isolates, which exhibited varying antimicrobial activity against Gram-positve bacteria. Previously isolated beta-sitosteryl-3-beta-O-glucoside, beta-sitosteryl-3-beta-O-diglucoside, 4-hydroxy-3)isopentent-2-yl) acetophenone, italipyrone and plicatipyrone, alongwith helipyrone and homoarenol were isolated. NML, New Delhi.

9203-1704 Roming, T.L., Weber, N.D., Murray, B.K., North, J.A., Wood, S.G., Hughes, B.G. , Cates, R.G.(Department of Microbiology, Brigham Young University, Provo, UT 84602, USA) **Antiviral activity of Panamanian plant extracts.** *Phytotherapy Research*, v. 6(1):p. 38-43, 1992 (17 ref, Eng).

Extracts prepared from the leaves of seven plants of Panamian tropical forest plants viz.,*Alseis blackiana, Aspidospermamegalocarpon, Hybanthus prunifolius, Ouratea lucens, Piper cordulatum, Trichilia cipo* and *Tetragastris panamensis* were screened for antiviral activity using three separate assay methods. The more polar (aqueous and ethanol) extracts of all plants demonstrated antiviral and virucidal activities. Good activities were found in the *O.lucens* and *T.cipo* ethanol and aqueous extracts which were further characterized for antiviral activity and cytotoxic effects. These extracts had direct virucidal activity as well as intracellular antiviral activity against both DNA and RNA viruses. Antiviral activity was achieved with extract concentrations significantly lower than those necessary to produce cytotoxic effects. Additionally, extracts were less toxic to normal cells than to the tumour cells tested.

9203-1705 Sekar, R., Stella, C.A., Mothilal, M.R.(Department of Botany, Thiagarajan College, Madurai 625 009, TN, India) **Inhibition of Tobacco Necrosis Virus by plant extracts.** *Science & Culture*, v. 57(5&6): p. 136-138, 1991 (12 ref, Eng).

Leaf extracts of 92 plant species belonging to 39 families screened, showed inhibition of TNV to a varying degree. Thirteen plant species showed above 75 percent of inhibition.Leaf extract of *Prosopis chilensis* showed 100 percent inhibition.

9203-1706 Sharma, N., Verma, H.N.(Botany Department, Lucknow University, Lucknow 226 007, UP, India) **Effect of leaf extracts of Clerodendrum spp.on fruit rotting fungi.** *Fitoterapia*, v. 62(6): p. 517-518, 1991 (7 ref, Eng).

Leaf extracts of *C.aculeatum* and *C.fragrans* brought about considerable reduction in growth and sporulation of various fruit rot causing fungi, to varying extent. The leaf extract of *C.aculeatum* was more toxic to fungi than that of *C.fragrans*. The response of leaf extracts was concentration dependent.

9203-1707 Singh, V.K., Pandey, D.K.(Department of Botany, University of Gorakhpur, UP, India) **Fungitoxic studies on bark extract of Lawsonia inermis against ring warm fungi.** *Hindustan Antibiotics Bulletin*, v. 31(1-2): p. 32-35 , 1989 (Recd. 1992, 9 ref, Eng).

Screening of barks of 30 plants species against Microsporum gypseum and Trichophyton mentagrophytes, only *L.inermis* exhibited absolute toxicity. The *Lawsonia* bark extract was found to possess fungistatic nature at its maximum inhibiting dilution of 1:30 (w/v) against both the test pathogens, but it exhibited fungicidal activity at 1:10 (w/v). The extract showed the broad fungitoxic spectrum when tested against 13 ring worm fungi. Further the fungi toxicity of the extract remained unaltered at high temperature, on autaclaving, and after long storage. NSL, New Delhi.

9203-1708 Sinha, G.K.(Department of Chemistry, Government College, Rishikesh, UP, India) **Antimicrobial activity of some volatile oils isolated from aromatic plants of Kumaon.** *International Symposium on Newer Trends in Essen. Oils & Flavs, RRL Jammu, India. p.44*, Oct 21-23 (Eng).

Antimicrobial properties of essential oils from twenty aromatic plants, some of their important constituents and 1:1 combination of the oils have been investigated for their antibacterial and antifungal activity against five gram positive, seven gram negative bacteria and seven fungi. In general, main constituents of the oil were more active than the oil themselves. In some cases 1:1 combination of the oils were found more active than the individual oils. (Abstr. No. C-20).

9203-1709 Sordat-Diserens, I., Rogers, C.* , Sordat, B., Hostettmann, K.(Institut de Pharmacognosie et Phytochimie, Ecole de Pharmacie de 1'Universite de Lausanne, BEP, CH-1015 Lausanne, Switzerland) **Prenylated xanthones from Garcinia livingstonei.** *Phytochemistry*, v. 31(1): p. 313-316, 1992 (13 ref, Eng).

Five prenylated xanthones have been isolated from the root bark of *G.livingstonei* of which four are novel natural products. The xanthone, 12b-hydroxy-des-D-garcigerrin A was previously isolated from *G.gerrardii*. Structure elucidation was achieved by a combination of one- and two-dimensional NMR spectroscopic techniques, mass spectroscopy and chemical methods. The compounds are fungicidal against Cladosporium cucumerinum, a plant pathogenic fungus, whereas a third showed growth inhibitory activity against human colon carcinoma cell lines.

9203-1710 Sundriyal, R.C.(GB Pant Institute of Himalayan Environment and Development, Tadong (Gangtok), Sikkim 737 100, Sikkim, India) **Fungi toxic properties of flower extract of some wild plants of Garhwal Himalaya.** *Advances in Plant Sciences*, v. 4(2): p. 230-234, 1991 (5 ref, Eng).

Flower extracts of 5 plant species i.e. *Acacia arabica, Cassia fistula, Lantana camara, Rhododendron arboreum* and *Thevetia peruviana* were tested *in vitro* against conidial germination and germ tube length of *Alternaria solani*, the causal organism of early blight of potato. Flower extract of *L.camara* showed maximum antifungal properties as it has shown maximum inhibition of conidial germination.

9203-1711 Tomas-Lorente, F., Iniesta-Sanmartin, E. , Tomas-Barberan, F.A.*, Guirado, A.(Laboratorio de Fitoquimica, C E B A S (CSIC) Apdo. 195, Murcia 300 80, Spain) **Antimicrobial phenolics from Helichrysum picardii.** *Fitoterapia*, v. 62(6): p. 521-523, 1991 (11 ref, Eng).

From the aerial parts of *H.picardii* 5,7-dihydroxy-3, 8-dimethoxyflavone and galangin-3-methylether alongwith two previously isolated compounds were isolated. Antimicrobial activity of these compounds is also presented.

9203-1712 Velazhahan, R., Narayanasamy, P.(Department of plant Pathology, Tamil Nadu G D Naidu Agricultural University, Coimbatore 641 003, TN, India) **Inhibition of omato Spotted Wilt Virus (TSWV) by plant extracts.** *Science & Culture*, v. 57(5&6): p. 141-142, 1991 (7 ref, Eng).

Of the 71 plant extracts tested, plant extracts of *rotalaria juncea, Morus alba, Delonix regia* and *Tectona randis* showed high percentage (about 85 percent) of inhibition of TSW Virus.

Insecticidal & Piscicidal Activity

9203-1713 Adewunmi, C.O.(Drug Research and Production Unit, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Nigeria) **Subchronic exposure of Biomphalaria glabrata eggs to aridanin and niclosamide.** *Journal of Ethnopharmacology*, v. 31: p. 209-216, 1991 (11 ref, Eng).

Treatment of 3-day-old *B.glabrata* eggs with aridanin (extracted from *Tetrapleura tetraptera*) caused a knock-down effect on the prehatch snails, making this group most susceptible. The development and hatching of O-to-1-day-old eggs could not be prevented but was prolonged by continuous exposure to aridanin (0.5-10mg/l). Prehatch snails were less susceptible than juvenile and adult snails. Nichosamide (0.625-0.35 mg/l) arrested the development of *B.glabrata*. NML, New Delhi.

9203-1714 Ahmad, S., Khan, A.A.(Department of Botany, Aligarh Muslim University, Aligarh 202 002, UP, India) **Nematicidal action of Antigonon leptopus against Meloidozyne incognita Race-1.** *Current Nematology*, v. 2(1): p. 3-4, 1991 (6 ref, Eng).

The water extract of *A.leptopus* in standard concentration (20 g plant part macerated in 100 in grinder and then soaked in 100 ml water) proved toxic to second stage juveniles of nematodes Race 1. The flower was found to be more toxic than leaf and stem in all the concentrations. NSL, New Delhi.

9203-1715 Ali, M.A., Mikage, M., Kiuchi, F. , Tsuda, Y.*, Kondo, K.(Faculty of Pharmaceutical Sciences and School of Medicine, Kanazawa University, 13-1 Takara-machi, Kanazawa 920, Japan) **Screening of crude drugs used in Bangladesh for nematocidal activity on the larva of Toxocara canis.** *Shoyakugaku Zasshi*, v. 45(3): p. 206-214, 1991 (10 ref, Eng).

A significant nematocidal activity was found in 45 samples of the water extracts at a concentration of 10 mg/ml and in 25 samples of the methanol extracts at 1 mg/ml. The water extract of devdaru (B72, *Cedrus deodara*) was active (RM24=0) even at a concentration of 1 mg/ml, in which, pinosylvin and pinosylvin mono-methyl ether were identified as nematocidal constituents. The methanol extracts of bish long (B57), devdaru, ritha (B51, *Sapindus trifoliatus*), serfuka (B14) and shika kai (92, *Acacia concinna*) were also active even at a concentration of 0.1 mg/ml.

9203-1716 Ayyangar, G.S.G., Rao, P.J.(Division of Entomology, IARI, New Delhi 110 012, India) **Changes in haemolymph censtituents of Spodoptera litura Fabr. under the influence of Azadirachtin.** *Indian Journal of Entomology*, v. 52(1): p. 69-83 , 1990 ((Recd. 1991; 54 ref), Eng).

An injected dose of azadirachtin (1 ug/g) significantly decreased certain haemolymph constituents of the last larval instar. However, it increased ninhydrin positive substances, sodium and potassium concentration. NSL, New Delhi.

9203-1717 Bandara, K.A.N.P., Kudagamage, C.(Central AGricultural Research Institute, Gannoruwa, Sri Lanka) **Potential of chitin inhibitors and botanical insecticides for the control of cabbage caterpillars.** *Tropical Agriculturist*, v. 145: p. 125-127, 1989 (Eng).

Neem oil sprayed at 10-day intervals effectively reduced the egg hatchability. Reduction in the number of leaf eating caterpillars was observed in neem oil and *Hortonia angustifolia* root extract treated plants.

9203-1718 Bansode, P.T., Kurundkar, B.P.(Department of Plant Pathology, Marathwada Agricultural University, Parbhani 431 402, Maharshtra, India) **Efficacy of organic amendments and plant extractsin management of root-knot of brinjal.** *Indian Journal of Plant Pathology*, v. 7(2): p. 160-163 , 1989 (12 ref, Eng).

The organic amendments, reduced root-knot infestation and nematode multiplication as compared to control. Decaffeinated tea waste was most effective followed by ground nut shell powder. *Tephrosia purpurea, Nyctanthes arborea, Erythrina indica* and *Gardenia gumnifera* applications significantly reduced number of galls and nematode multiplication. NSL, New Delhi.

9203-1719 Chattopadhyay, P.R.(Department of Zoology, Sonamukhi College, Sonamukhi, Bankura 722 207, WB, India) **Nematicidal properties of some plant materials on tomato (Lycopersicon esculentum var. local) infested with Meloidogyne incognita.** *Geobios*, v. 18(5-6): p. 232-236, 1991 (9 ref, Eng).

The number of primary galls of Meloidogyne incognita on tomato was reduced by seed and leaf dust of *Datura stramonium*, powdered bark of *Holarrhena antidysenterica* which exhibited maximum reduction of galls in the highest concentration accompanied by a corresponding increase in fruit yield.

9203-1720 Chen, T.B., Galinis, D.L., Wiemer, D.F.*(Department of Chemistry, University of Iowa, Iowa City, Iowa 522 42, USA) **Cornutin A and B: Novel ditepenoid repellents of leafcutter ants from Cornutia grandifolia.** *Journal of Organic Chemistry*, v. 57(3): p. 862-866 , 1992 (13 ref, Eng).

Two novel neo-clerodane diterpenoids, distinguished by a unique ether linkage spanning C-1 and C-12 have been isolated from the leaves of *C.grandifolia*. These two highly oxidized diterpenoids are significant repellents of the leafcutter and in laboratory bioassay. Two simpler neo-clerodanes isolated from the same plant, identified as the parent carboxylic acids to the methyl esters ajugar in IV and deactylajugarin-IV, showed no significant activity in the bioassay at comparable concentrations.

9203-1721 Geerts, S., Belot, J., Sabbe, F. , Triest, L., Sidhom, M.(Institute of Tropical Medicine, Nationalestraat 155, B-2000 Antwerp, Belgium) **Ambrosia maritima: effect on molluscs and non-target organisms.** *Journal of Ethnopharmacology*, 1991 (53 ref, Eng).

Recent development in the field of morphology and taxonomy, the molluscicidal principle-the sesquiterpene lactones, present in *A.maritima* and effects on snail and on non-targetorganism have been reviewed. The use of the plant in traditional medicine has also been discussed. NML, New Delhi.

9203-1722 Harmatha, J., Nawrot, J.(Institute of Organic Chemistry and Biochemistry, Czechoslovak Academy of Science, Prague, Czechoslovakia) **Feeding deterrent activity of some cardenolides, coumarins and 3-nitropropoinates of glucose from Coronilla varia L. against selected insect storage pests. (Abstract of paper presented at Symposium on Prospects of therapeutical and Economic use of the Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Krolava).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 106, 1989 (3 ref, Eng).

Out of ten compounds isolated from *C.varia*, 3-nitropropionic acid exhibited strongest antifeeding activity and this activity is comparable with the best antifeedants of the sesquiterpene, rotenone or lignane type.

9203-1723 Huesing, J.E., Murdock, L.L., Shade, R.E.(Department of Entomology, Purdue University, West Lafayette, IN 47907-1158, USA) **Rice and stinging nettle lectins: Insecticidal activity similar to wheat germ agglutinin.** *Phytochemistry*, v. 30(11): p. 3565-3568, 1991 (28 ref, Eng).

Previous studies have shown that lectins with specificity for GlcNAc residues, when fed in the diet of the cowpea weevil, Callosobruchus maculatus, cause delays in its development. An in vivo structure activity analysis was carried out to determine what molecular features lead to maximum lectin toxicity. Although rice lectin has a four-fold greater agglutinating activity toward mammalian erythrocytes than wheat germ agglutinin (WGA), its biological activity when fed to C.maculatus is similar to WGA. Stinging nettle lectin, a poor agglutinin, is ca two to four times less effective than WGA.

9203-1724 Jefferies, P.R., Toia, R.F. , Brannigan, B., Pessah, I., Casida, J.E.(Pesticide Chemistry and Toxicology Laboratory, Department of Entomological Sciences, University of California, Berkeley, California 94720, USA) **Ryania insecticide: Analysis and biological activity of 10**

natural ryanoids. *Journal of Agricultural and Food Chemistry*, v. 40(1): p. 142-146, 1992 (16 ref, Eng).

Ryania insecticide, the powdered stemwood of *Ryania speciosa* was analyzed by HPLC and 1H NMR for the content (ppm, w/w) of 10 ryanoids. The compounds were isolated and their potencies compared for toxicity to housefly adults (injection, piperonyl butoxide as a synergist), flour beetle larvae (dietary exposure), and mice (intraperitoneal) and for competition with 3{H}ryanodine for binding to the Ca2+release channel complex. Ryanodine (range 450-600 ppm) and 9,21-dehydroryanodine (650-700 ppm) are essentially equipotent and account for almost all of the biological activity of ryania in each of these systems. 9-Hydroxy-10-epiryanodine (7-17 ppm) and three 8ax-hydroxy-10-epiryanodine derivatives {10-(O-methyl) (28-33 ppm), dehydro (30-64 ppm), and 10-(O-methyl)dehydro (22-32 ppm)} are very effective with houseflies but not in the other assays. 18-Hydroxyryanodine (ppm), ryanodyl 3-(pyridine-3-carboxylate) (42-58 ppm), 8ax,18-dihydroxy-10-(O-methyl)-10-epiryanodine (5-10 ppm, and 9-hydroxyanhydroryanodine (12-17 ppm) are all of low activity. The potency of a ryanoid at the Ca+2 release channel is a better predictor of toxicity to mice and beetle larvae than to housefly adults.

9203-1725 Kumar, D., Mishra, S.K., Tripathi, H.C.(Division of Pharmacology and Toxicology, Indian Veterinary Research Institute, Izatnagar 243 122, Bareilly, UP, India) **Mechanism of anthelmintic action of benzylisothiocyanate.** *Fitoterapia*, v. 62(5): p. 403-410, 1991 (25 ref, Eng).

The mechanism of anthelmintic action of benzylisothiocyanate (BITC, an anthelmintic principle of *Carica papaya* was compared with that of mebendazole (MBZ) using Ascaridia galli as an in vitro model. Both BITC (100 and 300 microM) and MBZ (3 and 10 microM) inhibited glucose uptake and depleted glycogen content in the presence of glucose. However, these drugs had no effect on glycogen content of the worms in the glucose free incubation medium. Neither BITC (100 and 300 microM) nor MBZ (3 and 10 microM) had any effect on AChE activity of A.galli in vitro. BITC (100 and 300 mícroM) per se contracted the toad Rectus muscle and enhanced frequency and magnitude of spontaneous contractions of A.galli. The drug reduced the gross visual motility of A.galli after 20 h of incubation. The mechanism of anthelmintic action of BITC in inhibiting energy metabolism and in affecting motor activity of the parasite in vitro has been reported.

9203-1726 Mojumder, V., Mishra, S.D.(Division of Nematology, I A R I, New Delhi 110 012, India) **Nematicidal efficacy of some plant products and management of Meloidogyne incognita in pulse crops by soaking seeds in their aqueous extracts.** *Current Nematology*, v. 2(1): p. 27-32, 1991 (5 ref, Eng).

Water soluble portions of oil seed cakes of neem (*Azadirachta indica*), mustard (*Brassica rapa*), Karanj (*Pongamia glabra*) and groundnut (*Arachis hypogea*) were found to be nematicidal Aqueous extracts of neem and mustard reduce hatching from egg masses of M.incognita, inhibited penetration juvenile into mung seedlings. Seed soaking in aqueous extracts of neem mustard karanj and groundnut cakes and leaf extracts of bhang *Cannabis sativa* bhangra *Eclipta alba* dhatura *Datura metel* Kateli *Argemone mexicana* and neem reduced penetration nematodes juvenile in chick pea. NSL, New Delhi.

9203-1727 Mullin, C.A., Alfatafta, A.A. , Harman, J.L., Everett, S.L., Serino, A.A.(Pesticide Research Laboratory and Graduate Study Center, Department of Entomology, Pennsylvania State University Park, Pennsylvania 16802, USA) **Feeding and toxic effects of floral sesquiterpene lactones, diterpenes, and phenolics from sunflower (Helianthus annuus L.) on western corn rootworm.** *Journal of Agricultural and Food Chemistry*, v. 39(12): p. 2293-2299, 1991 (12 ref, Eng).

Feeding deterrents for adult western corn rootworm, *Diabrotica virgifera virgifera* (Coleoptera:Chrysomelidae), some of which were neurotoxic, were isolated from inflorescences of cultivated sunflower by chromatography of ethyl acetate solubles on Toyopearl TSK HW-40F and silica gel. Antifeedants were characterized by UV, 1H and 13C NMR, and EIMS. Fractionation by these methods gave 15 active principles of which argophyllin A and 3-O-methylniveusin A, both sesquiterpene lactone angelates, were the most potent. Feeding deterrency decreased in the order sesquiterpenes > diterpenes flavonoidsdicaffeoylquinic acids. The diterpenoic acid grandifloric acid and its 15-angelate and the flavonoids nevadensin and quercetin beta-7-O-glucoside were much poorer antifeedants, although more abundant components of sunflower. Sunflower antifeedants act jointly in an additive fashion. The highly active antifeedant germacranolide angelates exhibit structural features and injected symptoms in adult rootworm similar to picrotoxinin, a gamma-aminobutyric acid gated chloride channel antagonist, suggesting a link between sesquiterpene neurotoxicity and GABA.

9203-1728 Schmitt, A., Telikepalli, H. , Mitscher, L.A.* (Department of Medicinal Chemistry, University of Kansas, Lawrence, KS 6605-2506, USA) **Plicatin B, the antimicrobial principle of Psoralea juncea.** *Phytochemistry*, v. 30(11): p. 3569-3570, 1991 (23 ref, Eng).

The major antimicrobial agent present in extracts of the leaves and stems of *P.juncea* is identified as methyl

3-{4-hydroxy-3-(3-methyl-2-butenyl}-2-(E)-propenoate (plicatin B) by spectroscopic and chemical correlations.

9203-1729 Sharma, R.N.(National Chemical Laboratory, Pune 411008, Maharashtra, India) **The utilisation of essential oils and some common/allelochemic constituent for non-insecticidal pest management strategies.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.34,* Oct 21-23, 1991 (Eng).

Essential oils of many plants contain a number of bioactive compounds which may exert regulatory or inhibitory influence on insect life processes, notably growth and development. Some of these constituents have been identified as definite allelochemics toxic or behaviour manipulatory. A number of such chemicals have been examined on different insect pests of agricultural, forest and public health importance. Thus, essential oils of *Angelica, Calamus, Carrot, Cedrus, Costus* and Valarian, as also allelochemic/common constituents such as farensol, geraneol, citral, eugenol, terpeneol, etc. were found to exhibit toxic and/or behavioural effects on mosquitoes, lepidopteran larvae and the cyclops vector of guineaworm disease at highly competitive doses. Possibilites of developing new non-insecticidal stragegies of arthropod management using these comparatively safe chemicals or their suitable combinations with other plant products have been discussed. (Abstr. No. C-11).

9203-1730 Thakur, K.D., Khune, N.N., Sable, J.E.(Punjabrao Krishi Vidyapeeth, Akola, Maharashtra, India) **Efficacy of some plant extracts on inhibition of cotton pathogens.** *Orissa Journal of Agricultural Research,* v. 4(1&2): p. 90-94, 1991 (12 ref, Eng).

In vitro studies has been carried out on the extracts of 9-medicinal plants viz. *Azadirachta indica, Ipomoea cornea, Nerium odorum, Vinca rosea, Punica granatum, Clerodendron inerme, Eucalyptus globulus, Parthenium hysterophorus* and *Datura metel* to find out their antifungal and antibacterial properties against some cotton pathogens. The results revealed that *Punica granatum, Datura metel* had both fungal and antibacterial activities. Further, it was observed that extracts of *P.granatum,* when prepared by using water and alcohol did not change its antigungal as well as antibacterial activities. NSL, New Delhi.

9203-1731 Tsuda, Y., Goto, Y., Mikage, M. , Kondo, K.(Faculty of Pharmaceutical Sciences, Kanazawa University, 13-1 Takara-machi, Kanazawa 920, Japan) **Nematocidal principle(s) in Ulmi pasta.** *Shoyakugaku Zasshi,* v. 45(3): p. 270-273, 1991 (4 ref, Eng).

Ulmi pasta (fermented mixture of fruits, flowers and leaves of *Ulmus macrocarpa* showed an appreciable nematocidal activity on the second-stage larvae of *Toxocara canis.* Its active constituent(s) was identified as decanoic acid by gas chromatography (after methylation) of the effective fractions.

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9203-1732 Abe, F., Yamauchi, T.*, Nohara, T.(Faculty of Pharmaceutical Sciences, Fukuoka University, 8-19-1 Nanakuma, Jonan-ku, Fukuoka 814-01, Japan) **C-Nor-D-homo-cardenolide glycosides from Thevetia neriifolia.** *Phytochemistry,* v. 31(1): p. 251-254, 1992 (8 ref, Eng).

Along with known digitoxigenin alpha-L-thevetoside and alpha-L-acofrioside, the corresponding glycosides of a C-nor-D-homocardenolide were isolated from the air-dried leaves of *T.neriifolia* and their structures determined by spectral and chemical methods. Triosides of the C-nor-D-homo-cardenolide were obtained from the methanol extract of the fresh leaves.

9203-1733 Abe, F., Yamauchi, T.*, Yaga, S. , Minato, K.(Faculty of Pharmaceutical Sciences, Fukuoka University, 8-19-1 Nanakuma, Jonan-ku, Fukuoka 814-01, Japan) **Pyrrolizidine alkaloids from Parsonsia laevigata in Okinawa Island (studies on Parsonsia. V).** *Chemical & Pharmaceutical Bulletin,* v. 39(6): p. 1576-1577, 1991 (8 ref, Eng).

Nine pyrrolizidine alkaloids including three new compounds, were isolated from *P.laevigata* collected in Okinawa Island. No courtship pheromone with a dihydropyrrolizine framework was detectable in hair-pencil of Idea leuconoe, whose worms feed on the leaves of *P.laevigata.*

9203-1734 Achari, B., Giri, C., Saha, C.R. , Dutta, P.K., Pakrashi, S.C.(Indian Institute of Chemical Biology, Calcutta 700 032, WB, India) **A neo-clerodane diterpene from Clerodendron inerme.** *Phytochemistry,* v. 31(1): p. 338-340, 1992 (8 ref, Eng).

The structure of a new diterpene isolated from the leaves of *C.inerme* was established by spectroscopic methods as 15-methoxy-14,15-dihydro-3-epicaryoptin.

9203-1735 Achenbach, H., Utz, W., Usubillaga, A., Rodriguez, H.A. (Institute of Pharmacy and Food Chemistry, Department of Pharmaceutical Chemistry, University of Erlangen, 8520 Erlangen, Germany) **Lignans from Krameria ixina.** *Phytochemistry,* v. 30(11): p. 3753-3757, 1991 (22 ref, Eng).

From a methylene chloride extract of the roots of *K.ixina* nine new neolignans/nor-neolignans besides 24-methylenecycloartanol and eight further lginan-type compounds already known from other Krameriaceae were isolated.

9203-1736 Adikaram, N.K.B. , Ewing, D.F. , Karunaratne, A.M., Wijeratne, E.M.K.(Department of Botany, University of Peradeniya, Peradeniya, Sri Lanka) **Antifungal compounds from immature Avocado fruit peel.** *Phytochemistry*, v. 31(1): p. 93-96, 1992 (8 ref, Eng).

Three antifungal compounds isolated from the peel of immature Avocado (*Persea americana*)fruit have been identified as 1,2,4- trihydroxyheptadec-16-yne, 1,2,4-trihydroxyheptadec-16-ene and 1-acetoxy-2, 4-dihydroxyheptadec-16-yne, previously detected in extracts from Avocado seeds.

9203-1737 Adjibade, Y., Weniger, B., Quirion, J.C., Kuballa, B.*, Cabalion, P., Anton, R.(Universite Louis Pasteur de Strasbourg, Faculte de Pharmacie, Laboratoire de Pharmacognosie, BP 24, F-67401 Illkirch cedex, France) **Dimeric alkaloids from Psychotria forsteriana.** *Phytochemistry*, v. 31(1): p. 317-319, 1992 (11 ref, Eng).

Three alkaloids, (-)-calycanthine, iso-calycanthine and meso-chimonanthine, a dimeric indole isomeric with the former compounds have been isolated from *P.forsteriana* and identified on the basis of their spectral data and by comparison with those of previously described compounds.

9203-1738 Agarwal, K., Vishwakarma, R.A.* , Popli, S.P.(Central Institute of Medicinal and Aromatic Plants, Lucknow, UP, India) **Triterpenoids from Heterophragma adenophyllum.** *Fitoterapia*, v. 62(5): p. 459-460, 1991 (6 ref, Eng).

Ursolic acid (0.03 percent), oleanoic acid (0.045) and beta-amyrin (0.025) alongwith previously isolated constituents were isolated from *H.adenophyllum* leaves.

9203-1739 Agarwal, S.G., Thappa, R.K., Dhar, K.L.(Regional Research Laboratory, Jammu-Tawi 180001, J&K, India) **Potential ambergris odorants from labdane diterpenes ex Juniperus pseudosabina.** *International Symposium on Newer Trends in Essen.Oil & Flavs, RRL Jammu, J&K, India. 37*, Oct 21-23, 1991 (Eng).

The needles and twigs of Indian *J.pseudosabina* were analyzed for the composition of their essential oil and possible aroma precursors. The non volatile portion of the plant contained large amount of novel labdane diterpenes, which were isolated from hexane extract and their absolute structures were assigned. The major diterpenes viz. 8(17), 14-labdadiene-3R, 13R-diol and 3-oxo-8(17), 14-labdadien-13R-ol could be the potential source of expensive and novel Ambergris type of compounds particularly 3-oxo and 3-hydroxy ambracetal and epiambracetal. Various diterpenes and the key intermediates for obtaining such compounds, have been described. (Abstr. C-14).

9203-1740 Alfonso, D., Kapetanidis, I. , Bernardinelli, G. (Laboratoire de Pharmacognosie, Universite de Geneve, Sciences II, 30, quai Ernest-Ansermet, CH-1211 Geneve 4, Switzerland) **Iochromolide: a new acetylated withanolide from Iochroma coccineum.** *Journal of Natural Products*, v. 54(6): p. 1576-1582 , 1991 (19 ref, Eng).

The phytochemical investigation of *I.coccineum* afforded three withanolides: withaferine A(1), withacnistine(2), and a new compounds, the (17R,20S,22R)-4beta-hydroxy-1-oxo-5beta, 6beta-epoxy-16alpha-acetoxywitha-2, 24-dienolide, which we called iochromolide(3). The structure of 3 was deduced on the basis of NMR and mass spectral comparison with 1 and 2 and definitively established by X-ray crystallography.

9203-1741 Ali, M.(Faculty of Pharmacy, Jamia Hamdard, Hamdard University, Hamdard Nagar, New Delhi 110 062, India) **A new sterol from Musa balbisiana seeds.** *Indian Drugs*, v. 29(4): p. 155-156, 1992 (7 ref, Eng).

A new sterol, isolated from the seeds of *M.balbisiana*, has been characterized as 25-methylcholest-1, 7-dien-3-on-5alpah-ol on the basis of spectral data analysis and chemical reactions.

9203-1742 Aquino, R., De Crescenzo, S., De Simone, F.* (Dipartimento di Chimica delle Sostanze Naturali, Universita Degli Studi "Federico II" Via D. Montesano 49-80131 Napoli, Italy) **Constituents of Banisteriopsis caapi.** *Fitoterapia*, v. 62(5): p. 453, 1991 (6 ref, Eng).

Stigmasterol (0.029 percent), beta-sitosterol (0.033), ursolic acid (0.011), oleanolic acid (0.022), nerolidol (0.014), were isolated from the bark of *Banisteriopsis caapi*.

9203-1743 Aquino, R., Clavatta, M.L., De Simone, F.*(Dipartimento di Chimica delle Sostanze Naturali, Universita Degli Studi "Federico II", Via D. Montesano 49-80131 Napoli, Italy) **Catechins from Croton draconoids.** *Fitoterapia*, v. 62(5): p. 454, 1991 (4 ref, Eng).

From latex of *C.draconoides*, (+)-gallocatechin, (-)-epigallocatechin and (-)-epi-3,5,7,3',5'-penta hydroxyflavan were isolated.

9203-1744 Aquino, R., Ciavatta, M.L., De Tommasi, N., De Simone, F.*, Pizza, C.(Dipartimento di Chimica delle Sostanze Naturali, Universita degli Studi "Federico II". Via D. Montesano, 49-80131 Naploli, Italy) **Catechins from Detarium microcarpum.** *Fitoterapia*, v. 62(5): p. 455, 1991 (7 ref, Eng).

Melilotoside, (+)-catechin, (-)-epicatechin, (+)-catechin-7-O-galloylester, (-)-epicatechin-3-O-galloylester were isolated from *D.microcarpum* bark.

9203-1745 Asami, A., Hirai, Y., Shoji, J.*(School of Pharmaceutical Sciences, Showa University, Hatanodai, Shinagawa-ku, Tokyo 142, Japan) **Studies on the constituents of palmae plants. VI. Steroid saponins and flavonoids of leaves of Phoenix canariensis hort. ex Chabaud, P. humilis Royle var. hanceana Becc., P. dactylifera L., and Licuala spinosa Wurmb.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2053-2056, 1991 (11 ref, Eng).

Steroid saponins and flavonoids of the leaves of *P.canariensis, P.humilis* var.*hanceana, P.dactylifera* and *L.spinosa* have been investigated. Tricin 7-O-beta-D-glucopyranoside, isorhamnetin 3-O-beta-D-glucopyranoside, isoquercitrin, isorhamnetin 3-O-beta-rutinoside, rutin, and methyl(25S)-proto-Pb from *P.canariensis*, 1,6, glucoluteolin, tricin 7-O-alpha-L-rhamnopyranosyl(1 to 2)-beta-D-glucopyranoside, and methyl (25S)-proto-loureiroside from *P.humilis* var.*hanceana*, 1,2,8, methyl proto-prosapogenin A of dioscin, methyl proto-reclinatoside and methyl proto-Pb from *P.dactylifera*, and vitexin and methyl(25S)-proto-dioscin from *L.spinosa* have been isolated and identified.

9203-1746 Atta-ur-Rahman ,Jamal, A. , Choudhary, M.I.*, Asif, E. (HEJ Research Institute of Chemistry, University of Karachi, Karachi 75270, Pakistan) **Two withanolides from Withania somnifera.** *Phytochemistry*, v. 30(11): p. 3824-3826, 1991 (8 ref, Eng).

W.somnifera has yielded two new withanolides, 5-dehydroxywithanolide-R(23beta-hydroxy-6alpha,7alpha-epoxy-1-oxo-22R- witha-2,24-dienolide) and withasomniferin-A (17-hydroxy-6alpha,7alpha -epoxy-1-oxo-22R-witha-4,24-dienolide). Their structures were established on the basis of spectroscopic studies.

9203-1747 Ayoub, M.T., Rashan, L.J., Adaay, M.H., Al-Khazreji, A.L.(Department of Chemistry, College of Science, University of Mosul, Mosul, Iraq) **Separation of quercetin and kaempferol from Iraqi Peganum harmalan seeds.** *Geobios*, v. 18(5-6): p. 193-195, 1991 (9 ref, Eng).

Flavanoids, quercetin and kaempferol were isolated from the aqueous extract of *P.harmala* seeds. The structures were established on the basis of spectral studies.

9203-1748 Bader, G., Wray, V., Hiller, K.*(Fachvbereich Pharmazie, Humboldt-Universitat zu Berlin, Goethestrasse 54, 0-1120 Berlin, Germnay) **Virgaureasaponin 3, a 3,28-bisdesmosidic triterpenoid saponin from Solidago virgaurea.** *Phytochemistry*, v. 31(2): p. 621-623, 1992 (6 ref, Eng).

A new 3,38-bisdesmosidic triterpenoid was isolated from the mixture of deacylated saponins from the aerial parts of *S.virgaurea*. The structure of virgaureasaponin 3 was determined as 3-O-beta-D-glucopyranosyl-(1 to 3)-beta-D-glucopyranosylpolygalacic acid 28-O-beta-D-fucopyranosyl-(1 to 2)-alpha-L-rhamnopyranosyl-(1 to 3)-beta-D-xylopyransoyl-(1 to 4)-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-fucopyranoside mainly by various 2D NMR techniques.

9203-1749 Bakhtiar, A., Gleye, J.*, Moulis, C., Fouraste, I. (Andalas University, Faculty of Sciences, Department of Pharmacy, Padang, Indonesia) **C-Glycosylflavones from Raputia paraensis.** *Phytochemistry*, v. 30(11): p. 3840-3841, 1991 (8 ref, Eng).

From the stem bark of *R.paraensis* were identified schaftoside, vicenin-1 and two new compounds: 6-C-beta-D-glucosyl-8-C-beta-D-xylosylchrysoeriol and 6-C-xylosyl-8-C-glucosylchrysoeriol.

9203-1750 Bandoni, A.L., Juarez, M.A. , Mizrahi, I.(Catedra de Farmacognosia, Facultad de Farmacia y Bioquimica de Burenos Aires, Junin 956,(1113) Buenos Aires, Argentina) **Contribution in the study of essential oils of cumin (Cuminum cyminum L.).** *Essenze Derivati*, v. 61(1): p. 32-49, 1991 (21 ref, Ita, Eng).

Physico-chemical properties of essential oils of cumin obtained from Argentinia crops, Turkey and other country markets are presented. New parameters for the improvement of quality control of the material are also discussed.

9203-1751 Barakat, H.H., El-Mousallamy, A.M.D. , Souleman, A.M.A., Awadalla, S.(National Research Centre, Dokki, Cairo Egypt) **Flavonoids of Ochradenus baccatus.** *Phytochemistry*, v. 30(11): p. 3777-3779, 1991 (12 ref, Eng).

From the aerial parts of *O.baccatus*, the new flavonoids, quercetin 3-O-beta-glucosyl(1 to 2)-alpha-rhamnoside-7-O-alpha-rhamnoside and quercetin 3-O-p-coumaryl(1 to 6)-beta-glucosyl(1 to 6)-beta-glucoside-7_O-alpha-rhamnoside were isolated. The known quercetin glycosides, quercetin 3-gentiobioside, isoquercitrin, quercitrin, together with the known kaempferol glycosides, astragalin and afzelin, were also characterized. The structures were established by conventional methods of analysis and confirmed by spectral analysis.

9203-1752 Barrero, A.F., Sanchez, J.F. , Barron, A., Ramirez, A. (Departamento de Quimica Organica de la Universidad de Granada, Granada, Spain) **Biomimetic cyclizations of a germacranolide from Tanacetum annuum.** *Phytochemistry*, v. 31(1): p. 332-335, 1992 (14 ref, Eng).

A new germacranolide was isolated from the flowers of *T.annuum*, which was chemically transformed into three eudesmanolides and a lactone with a rearranged sesquiterpene skeleton.

9203-1753 Barrero, A.F., Sanchez, J.F. , Alvarez-Manzaneda, E.J., Munoz, M. , Haidour, A.(Departamento de Quimica Organica, Facultad de Ciencias, Universidad de Granada, Granada, Spain) **Diterpenoids and cyclolanostanolides from Abies marocana.** *Phytochemistry*, v. 31(2): p. 615-620, 1992 (12 ref, Eng).

From the neutral fraction of a hexane extract of the leaves of *A.marocana*, eight sesquiterpene hydrocarbons, 10-diterpenoids, and two triterpenoids have been identified. Seven are new natural products labda-7,12Z,14-triene, labda-8(17),12Z,14-triene, labda-7,11E,13Z-triene and labda-8(17),11E,13Z-triene, 7alpha-18-dihydroxyabieta-8,11,13-triene, (23R)-3-alpha-hydroxy-9,19-cyclo-9beta-lanostan-26,23-olide and (23R)-3alpha-hydroxy-9,19-cyclo-9beta-lanost-24-en-26,23-olide. Their structures have been established by spectroscopic methods and chemical correlations.

9203-1754 Bashir, A., Hamburger, M., Msonthi, J.D.*, Hostettmann, K.(Institut de Pharmacognosie et Phytochimie, Ecole de Pharmacie, Universite de Lausanne, Switzerland) **Isoflavones and xanthones from Polygala virgata.** *Phytochemistry*, v. 31(1): p. 309-311, 1992 (22 ref, Eng).

Three isoflavones and two xanthones have been isolated from the roots of *P.virgata*. The structures were established on the basis of spectral data of the isolates and of some derivatives. 5,7,4'-Trihydroxy-6, 8-dimethoxyisoflavone and 5,7-dihydroxy-6,8,4'-trimethoxyisoflavone are new natural products, whereas 5,7-dihydroxy-8,4'-dimethoxyisoflavone, although known synthetically, is reported here for the first time as a naturally occurring compound. The isolated xanthones (1,7-dihydroxy-2,3,4-trimethoxyxanthone and 1,7-dihydroxy-3,4-dimethoxyxanthone) have been described previously in other species.

9203-1755 Bennett, R.D., Miyake, M., Ozaki, Y., Hasegawa, S.(USDA, ARS, Fruit and Vegetable Chemistry Laboratory, 263 South Chester Avenue, Pasadena, CA 91106, USA) **Limonoid glucosides in Citrus aurantium.** *Phytochemistry*, v. 30(11): p. 3803-3805, 1991 (4 ref, Eng).

17-Beta-D-Glucopyranosides of limonin, obacunone, deacetylnomilin, nomilin, deacetylnomilinic acid, nomilinic acid, isolimonic acid, ichangin and 19-hydroxydeacetylnomilinic acid were isolated from sour orange seeds. The aglycone of the later compound is a possible intermediate in the biosynthesis of limonin.

9203-1756 Bhandari, S.P.S., Mishra, A., Roy, R., Garg, H.S.* (Medicinal Chemistry Division, Central Drug Research Institute, Lucknow, UP, India) **Koelzioside, an iridoid diglycoside from Scrophularia koelzii.** *Phytochemistry*, v. 31(2): p. 689-691, 1992 (9 ref, Eng).

A new iridoid diglycoside named koelzioside has been isolated from the aerial parts of *S.koelzii*. The structure of koelzioside was elucidated by chemical and spectral analysis as 6-O-(2",3"-di-O-cinnamoyl-4"-O-acetyl)-alpha-L-rhamnopyranosyl catalpol.

9203-1757 Bhatt, P., Dayal, R.*(Minor Forest Products Division, Forest Research Institute, Dehra Dun 248 006, UP, India) **Stipulin, a prenylated chalcone from Dalbergia stipulacea.** *Phytochemistry*, v. 31(2): p. 719-721, 1992 (5 ref, Eng).

A new diprenylated chalcone stipulin (mp 122-23 degree C) has been characterized from the roots of *D.stipulacea.*

9203-1758 Bikram Singh, Virendra Singh, Sood, R.P.(CSIR Complex, Palampur- Himachal Pradesh 176061, India) **Studies on the chemical components of essential oil of Tagetes minuta Linn. from Himachal Pradeh.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.28*, Oct 21-23, 1991 (Eng).

The essential oil obtained from aerial parts of *T.minuta* growing as weed in North-Western Himalayan region was analysed by means of GLC and GC MS. Eighteen components were identified from the essential oil of flowers. Aromadendrene considered to be the major component from the Himalayan *Tagetes* oil was totally absent and instead ketones, viz., dihydrotagetone, tagetone, ocimenone were found to be major constituents. Seven more constituents were found not reported earlier in the tagetes oil. A comparative study of oil from leaves and flowers indicated that leaves carry major amount of dihydrotagetone and less of limonene, it was vice-versa in case of flowers. (Abstr. No. C-05).

9203-1759 Bradu, B.L. , Sarin, Y.K., Gupta, S.C.(Regional Research Laboratory, Jammu Tawi 180001, J&K, India)

Kashmir Matricaria rich in 1-Bisabolol and its oxides. *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL, Jammu, J&K, India. p.52*, Oct 21-23, 1991 (Eng).

Kashmir *Matricaria* was never explored as a raw material for utilization as a source of 1-bisabolol and its oxides besides chamazulene as vegetable dye. Comparative screening of the essential oils of Jammu grown German *chamomilla* with wild Kashmir *chamomilla* was carried out. Ample variations in the segregated populations of German *chamomilla* flowers was witnessed in its essential oil content ranging from 0.12-0.8 percent, 1-bisabolol and its oxides 10-55 percent, chamzulene 15-20 percent, dicycloether 20-25 percent. The bulk samples of flowers from Kashmir chamomile yielded essential oil 0.4-0.8 percent, 1-bisabolol and its oxides 55-60 percent, chamazulene 10-15 percent, besides di-cycloether 15-20 percent. The whole herb and root samples of both German and Kashmir chamomile on distillation revealed that in both cases the essential oil percentage varied from 0.1-0.2 percent. It was found that chamazulene was conspicuously absent in both the essential oils, while exhibiting appreciable increase in 1-bisabolol and its oxides (60-65 percent). (Abstr. No. B-07).

9203-1760 Brophy, J.J., Fookes, C.J.R., House, A.P.N.(Department of Organic Chemistry, University of New South Wales, PO Box 1, Kensington, NSW 2031, Australia) **2,4,6-Trimethoxytoluene from the genus 'Stockwellia'.** *Phytochemistry*, v. 31(1): p. 324-325, 1992 (11 ref, Eng).

2,4,6-Trimethoxytoluene has been isolated by steam distillation in yields of 80-89 percent (w/w) of leaf oil from fresh leaves of trees of the informal genus 'Stockwellia'. Thirty-nine other compounds were detected in the steam volatile oil, which was obtained in yields of 1-1.7 percent (w/w) of fresh leaves.

9203-1761 Brunke, E.J., Hammerschmidt, F.J. , Abd, El-Kawy, M.A., El-Kashoury, E.A. , El-Fishawy, A.M., Soliman, F.M.(Department of Pharmacognosy, Faculty of Pharmacy, University of Cairo, Cairo, Egypt) **Essential oil and fatty acids of Haplophyllum tuberculatum (Forssk.)A. Juss.** *Herba Hungarica*, v. 30(3): p. 34-40, 1991 (14 ref, Eng).

GLC-MS analysis of essential oil of *H.tuberculatum* twigs showed presence of 88 components. Monoterpene hydrocarbons was found to constitute upto 72 percent of the oil, major constituent being 3-carene (48 percent). Fatty acids prepared from the seed lipids of the plant was found to contain palmitic, stearic, oleic, linoleic and linolenic acids.

9203-1762 Bruno, M., Dominguez, G., Lourenco, A., Piozzi, F., Rodriguez, B., Savona, G. , de la Torre, M.C., Arnold, N.A.(Dipartimento di Chimica Organica dell'Universita, Archirafi 20,90123 Palermo, Italy) **Neo-Clerodane diterpenoids from Teucrium gracile.** *Phytochemistry*, v. 30(11): p. 3693-3697, 1991 (12 ref, Eng).

Four new neo-clerodane diterpenoids have been isolated from the aerial parts of *T.gracile.* The structures of these compounds were established by chemical and spectroscopic means.

9203-1763 Castro, O. , Soto, R.M.(Center for the Investigation of Natural Products (CIPRONA), University of Costa Rica, School of Chemistry, 2060, San Jose, Costa Rica) **Tetrahydrofurofuran lignans from Phoebe cinnamomifolia leaves.** *Fitoterapia*, v. 62(5): p. 457-458, 1991 (7 ref, Eng).

Epiashantin and diayangambin were isolated from *P.cinnamomifolia* leaves alongwith previously isolated catechins and proanthocyanidins.

9203-1764 Chang, R., Kim, D., Zeduk, U. , Shen, X., Chen, Y.*, Sun, H.(The Botanical Institute, Academy of Science DPRK, Pyngyang, D.P.R, Korea) **A diterpenoid from Rabdosia excisa.** *Phytochemistry*, v. 31(1): p. 342-343, 1992 (2 ref, Eng).

A minor new diterpenoid, excisanin C and five known diterpenoids were isolated from *R.excisa.* Structures were elucidated on the basis of spectroscopic analysis.

9203-1765 Charles, D.J., Simon, J.E. , Widrlechner, M.P.(New Crops Center, Department of Horticulture, Purdue University, West Lafayette, Indiana 47907) **Characterization of essential oil of Agastache species.** *Journal of Agricultural and Food Chemistry*, v. 39(11): p. 1946-1949, 1991 (17 ref, Eng).

A collection of 19 accessions of *Agastache foeniculum*(anise hyssop), *A.rugosa*(catnip giant hyssop), *A.nepetoides(Korean mint), and putative hybrids were analyzed. There was significant variation in oil content of the different lines of Agastache spp.*, ranging from 0.07 to 2.73(percent volume/dry weight) for leaves and from 0.10 to 3.00(percent volume/dry weight)for flowers. Variation in the essential oil composition was high among lines of *A.foeniculum* but low among lines of *A.rugosa.* Twenty-six compounds were identified in the essential oils, with methylchavicol being the major constituent (46.7-94.6 percent) in 14 lines of *A.foeniculum, A.rugosa,* and putative hybrids. In contrast, delta-cadinol was the major oil constitutent (39.6 percent) in *A.nepetoides.* Additional oil constituents found in these species in concentrations above 1 percent include beta-bourbonene, bornyl acetate, gamma-cadinene, alpha-cadinol, delta-cadinene, alpha-camphene, beta-caryophyllene, damascenone, beta-ionone, isomenthone, alpha-limonene, linalool, methyleugenol, beta-myrcene, cis-ocimene, 7-octen-4-ol, pulegone, and spathulenol.

9203-1766 Chawla, A.S., Sood, A., Manoj Kumar, Jackson, A.H. (Department of Pharmaceutical Sciences, Panjab University, Chandigarh 160 014, India) **Alkaloid constitutents from Erythrina xbidwillii flowers.** *Phytochemistry*, v. 31(1): p. 372-374, 1992 (7 ref, Eng).

The alkaloids present in the flowers of *E.xbidwillii* have been screened by GC-MS. A novel alkaloid, erythristemine-N-oxide has been isolated and its structure established by spectroscopic methods.

9203-1767 Chen, D.F., Xu, G.J., Yang, X.W., Hattori, M.*, Tezuka, Y., Kikuchi, T., Namba, T.(Research Institute for Wakan-Yaku, Toyama Medical and Pharmaceutical University, 2630 Sugitani, Toyama 930-01, Japan) **Dibenzocyclo-octadiene lignans from Kadsura heteroclita.** *Phytochemistry*, v. 31(2): p. 629-632, 1992 (10 ref, Eng).

From the stems of *K.heteroclita*, new dibenzocyclooctadiene lignans, named heteroclitins A-E, were isolated together with the known compounds, kadsurin and interiorin. Their structures were determined by spectroscopic means.

9203-1768 Chen, T.B., Wiemer, D.F.*(Department of Chemistry, University of Iowa, Iowa City, Iowa 52242, USA) **Corymbotins A-I: Highly oxidized kolovane derivatives from Casearia corymbosa.** *Journal of Natural Products*, v. 54(6): p. 1612-1618 , 1991 (20 ref, Eng).

Nine kolovane and norkolovane diterpenoids have been isolated from leaves of the tropical tree *C.corymbosa* and their structures elucidated. Each of these nine compounds an unusual, highly oxidized C ring that may be viewed as a protected dialdehyde; the norkolovanes contain an additional aldehyde group as well.

9203-1769 Chen, Y.Q., Luo, Y.R.(Shanghai Institute of Organic Chemistry, Academia Sinica, 200 032, Shanghai, People's Republic of China) **Isolation and structure elucidation of the anthraquinone glycosides from Rubia yunnanensis (Franch) Diels.** *Youji Huaxue*, v. 11(5): p. 523-524, 1991 (3 ref, Eng, CHi).

Two anthraquinone-3-O-(6'-O-acetyl)-alpha-L-rhamnosyl (1 to 2)-beta-D-glucoside and its 6'-deacetyl analogue have been isolated and identified.

9203-1770 Chowdhary, D.K., Kaul, B.L.(Regional Research Laboratory, Jammu-Tawi 180001, J&K, India) **Voltile aroma constituents of celery (Apium graveolens L. var. dulce, "RRL-85-1").** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.35*, Oct 21-23, 1991 (Eng).

The volatile aroma constituents of celery strain "RRL-85-1" were analysed using GC-MS. The principal constituents (percentage) of this strain were limonene (20.2 percent), beta-selenine (15.9 percent), butylphthalides (6.3 percent) and senkyunolides or isomers (37.3 percent). The highly characteristic odour of celery seed oil is reported to be associated only with the phthalides. (Abstr. No. C-12).

9203-1771 Clivio, P., Richard, B., Deverre, J.R., Sevenet, T.*, Zeches, M., Le Men-Oliver, L.(Faculte de Pharmacie (URA. au CNRS N 492), 51 Rue Cognacq-Jay 51096 Reims Cedex, France) **Alkaloids from leaves and root bark of Ervatamia hirta.** *Phytochemistry*, v. 30(11): p. 3785-3792, 1991 (22 ref, Eng).

During chemical investigation of the leaves and root bark of *E.hirta* 33 alkaloids were isolated. Seven are new: six are the 'monomeric' alkaloids (E) 16-epi-normacusine B. (E) 16-epi-affinisine, O-acetyl-16-epi-affinisine, affinisine-N(4)-oxide, dehydro-16-epi-affinisine, norfluorocurarine-N(4)-oxide, and the seventh is the bisindole 16-decarbomethoxyvoacamine-pseudoindoxyl. The known alkaloids are: (E) 16-epi-isositsirikine, beta-yohimbine, yohimbine, 19,20-dehydro-beta-yohimbine, beta-yohimbine-pseudoindoxyl, isositsirikine, 19,20-dihydroisositsirikine, beta-yohimbine-oxindole, normacusine B, affinisine, vobasine, dregamine, tabernaemontanine, norfluorocurarine, 12-hydroxynorfluorocurarine, apparicine, 3,14-dihydroellipiticine, antirhine, voacristine, ibogaine, iboxygaine, iboxygaine-hydroxyindolenine, iboluteine, 4',17(17beta)-dihydrotchibangensine, 16-decarbomethoxyvoacamine and 19,20-dihydro-16-decarbomethoxyvoacamine.

9203-1772 Cu, J.Q., Perineau, F., Gaset, A.(Laboratoire de Chimie des Agroressources, Ecole nationale Syuperieure de Chimie de Toulouse(INPT), 118, route de Narbonne, 31077 Toulouse Cedex, France) **Volatile components of violet leaves.** *Phytochemistry*, v. 31(2): p. 571-573, 1992 (16 ref, Eng).

Volatile components of leaves of *Viola odorata* Parma variety were extracted with 1,1,2-trichloro-1,2,2-trifluoroethane as well as hexane and analysed using GC, GC-MS and GC-FTIR. Quantitatively, the yields of leave solids varied greatly according to the experimental parameters. Qualitatively, the chemical composition differs with respect to the solvent used. More than 100 compounds were separated, of which 23 compounds have been identified, representing 95 percent of the total; 1-dodecanol, pentadeca-5,10-dien-1-ol, pentadec-5-en-1-ol, 1-octadecene, 1-eiocosene and octadeca-9, 12-dienoic acid are reported as violet leaf volatiles for the first time.

9203-1773 Cui, C.B., Tezuka, Y., Kikuchi, T.* , Nakano, H., Tamaoki, T., Park, J.H.(Research Institute for Wakan-Yaku (Oriental Medicines), Toyama Medical and Pharmaceutical University, 2630 Sugitani, Toyama 930-01, Japan) **Davallin, a new tetrameric proanthocyanidin from the rhizomes of Davallia mariesii Moore.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2179-2181, 1991 (7 ref, Eng).

Davallin, a new tetrameric proanthocyanidin which inhibits protein kinase C, has been isolated from the rhizomes of *D.mariesii*, and its structure was determined to be epicatechin-(4beta-6)-epiafzelechin-(4beta-8)-epicatechin-(4beta-6) -epicatechin by 2D NMR spectroscopy including HMQC and HMBC techniques.

9203-1774 D'Agostino, M., De Simone, F. , Zollo, F., Pizza, C. (Dipartimento di Chimica delle Sostanze Naturali, Universita di Napoli "Federico II", Via D. Montesano 49 80131 Napoli, Italy) **Isolation of 5,7-O-dimethyl-6-methoxykaempferol-3-O-beta-D-glucopyranoside from Eupatorium tinifolium.** *Fitoterapia*, v. 62(5): p. 445-446, 1991 (8 ref, Eng).

A new flavonol glycoside, identified as 5,7-O-dimethyl-6-methoxykaempferol-3-O-beta-D-glucopyrano side, on the basis of spectral and chemical data, has been isolated from the butanol extract of *Eupatorium tinifolium*.

9203-1775 D'Agostino, M., De Simone, F. , Zollo, F., Pizza, C.* (Dipartimento di Chimica delle Sostanze Naturali, Universita degli Studi "Federico II", Via D. Montesano 49, 80131 Napoli, Italy) **Constituents of Mikania cordifolia.** *Fitoterapia*, v. 62(5): p. 461, 1991 (2 ref, Eng).

From the aerial parts of *Mikania cordifolia* quercetin-3-O-glucoside, 3,5-dicaffeoylquinic acid and linalool 6-O-beta-D-glucopyranoside were isolated.

9203-1776 Damtoft, S.(Department of Organic Chemistry, The Technical University of Denmark, DK 2800 Lyngby, Denmark) **Iridoiod glucosides from Lamium album.** *Phytochemistry*, v. 31(1): p. 175-178, 1992 (9 ref, Eng).

L.album contains, besides lamalbid, two new secoiridoid glucosides, alboside A and alboside B, and the known carbocyclic iridoid, caryoptoside, which here is characterized for the first time. Alboside B is an equilibrium mixture of three isomers.

9203-1777 Davies, N.W., Miller, J.M., Naidu, R., Sotheeswaran, S. (Central Science Laboratory, University of Tasmania, Hobart, Australia) **Triterpenoids in bud exudates of Fijian Gardenia species.** *Phytochemistry*, v. 31(1): p. 159-162, 1992 (11 ref, Eng).

Five out of the nine bud exudates of Fijian *Gardenia* species examined contained triterpenoids. Three new triterpenoids have been characterized. They are: 9,19-cyclolanostane-2,24-dione; 9,19-cyclolanost-24-ene-3,23-dione; 4-nor-9,19-cyclolanost-24-ene-3,23-dione.

9203-1778 Davyt, D., Dellacassa, E., Ferreira, P., Menendez, P., Moyna, P.*, Vazquez, A.(Catedra de Farmacognosia y Productos Naturales, Facultad de Quimica, Avenida General Flores 2124, Montevideo, Uruguay) **Phytochemical screening of Uruguayan medicinal plants.** *Fitoterapia*, v. 62(6): p. 519-521, 1991 (13 ref, Eng).

A phytochemical study of 22 species representing 13 families growing in Uruguay was carried out. The presence of alkaloids, tannins, saponins, steroids/triterpenes, flavonoids, cardiac glycosides and quinones and their bilogical activities have been presented.

9203-1779 Desai, K., Baxi, A.J.(Department of Chemistry, Saurashtra University, Rajkot 360005, Gujarat, India) **Isolation of free amino acids and sugars from flowers of Clerodendron inerme.** *Indian Drugs*, v. 29(5): p. 246, 1992 (3 ref, Eng).

Presence of seven free amino acids and three free sugars have been reported in *C.inerme* flowers.

9203-1780 Ding, Y., Kinjo, J., Yang, C.R.* , Nohara, T.(Faculty of Pharmaceutical Sciences, Kumamoto University, Oe-honmachi, Kumamoto 862, Japan) **Triterpenes from Mucuna birdwoodiana.** *Phytochemistry*, v. 30(10): p. 3703-3707, 1991 (10 ref, Eng).

Methanolic extracts of the stalks of *M.birdwoodiana* on acid hydrolysis and subsequent methylation with diazomethane provided four triterpene sapogenols. On the other hand, investigation of glycosides after methylation of the same extract led to the isolation of four triterpene glycosides. On the basis of chemical and spectral evidence, their structures were characterized as methyl asiatate, methyl maslinate, two new sapogenols, methyl-1beta,2alpha,3beta,23-tetrahydroxyolean-12-en-28-oate (mucunagenin a), its urs-12-en isomer (mucunagenin b), 3-O-(6-O-methyl-beta-D-glucuronopyranosyl) methyl asiatate 3-O-{alpha-L-arabinopyranosyl(1 to 2)}-6-O-methyl-beta-D-glucuronopyranosyl methyl maslinate, 3-O-{alpha-L-arabinopyranosyl(1 to 2)}-6-O-methyl-beta-D-glucuronopyranosyl methyl asiatate and

3-O-(6-O-methyl-beta-D-glucuronopyranosyl) asiatic acid 28-O-beta-D-glucopyranoside.

9203-1781 Dixit, B.S., Srivastava, S.N. , Dixit, G.S., Chandel, P.S.(National Botanical Research Institute, Lucknow 226 001, UP, India) **Chemical examination of Lostus sanguineus Donn..** *Indian Journal of Pharmaceutical Sciences*, v. 53(6): p. 251-252, 1991 (4 ref, Eng).

Petroleum ether extract of *C.sanguineus* yielded diosgenin, tigogenin, five saponins, beta-sitosterol glucoside, glucose and rhamnose.

9203-1782 Dung, N.X., Phuong, D.L., Pha, N.M. , Lo, V.N., Leclercq, P.A.(Department of Technical Chemistry and Pharmacognosy, University of Hanoi, 19 Le Thanh Tong Street, Honoi-Vietnam) **Recent developments on study of new sources of essential oils and flavours from Vietnam.** *International Symposium on Newer Trends in Essential Oils & Flavs, RRL Jammu, J&K, India. p.7-8*, Oct 21-23, 1991 (Eng).

Some plants of families, Rutaceae and Zingiberaceae have been investigated as new sources of aromatic compounds in Vietnam. The plants are *Zanthoxylum nitidum, Murraya glabra, Citrus grandis* and *Amomum* spp. (Abstr. No. SL-01).

9203-1783 Duri, Z.J., Hughes, N.A., Munkombwe, N.M.*(Chemistry Department, University of Botswana, P.B. 0022, Gaborone, Botswana) **Diterpenoids from Spirostachys africana.** *Phytochemistry*, v. 31(2): p. 699-702, 1992 (7 ref, Eng).

Two new beyerene derivatives; en-3beta,18-dihydroxy-beyer-15-ene-2-one and ent-3beta-hydroxy-19-nor-beyer-15-ene-2, 12-dione have been isolated from the heartwood of *S.africana* in addition to the known ent-3beta-hydroxy-beyer-15-ene-2-one.

9203-1784 Dutta, S.C., Baruah, A.K.S., Mathur, R.K.(Regional Research Laboratory, Branch: Itanagar PO Naharlagun 791110, Arunachal Pradesh, India) **Turpentine oil of Pinus merkusii from Arunachal Pradesh.** *Indian Perfumer*, v. 35(3): p. 167, 1991 (2 ref, Eng).

Oleoresin of *P.merkusii* collected from Mawang Forest of Lohit dist in Arunachal Pradesh on steam distillation afforded turpentine oil (22.2 percent); yield of resin was 76.5 percent. Its constituents were alpha pinene (59.1 percent) beta-pinene (4.7 percent), delta-3-carene (23.2 percent). The oil appears to be similar to that of *P.roxburghii*. It is suggested that the tapping of the oleoresin from *P.merkusii* in Arunchal Pradesh should be taken up.

9203-1785 El-Mousallamy, A.M.D., Barakat, H.H.* , Souleman, A.M.A. , Awadallah, S.(Faculty of Science, Zagazig University, Zagazig, Egypt) **Polyphenols of Acacia raddiana.** *Phytochemistry*, v. 30(11): p. 3767-3768, 1991 (10 ref, Eng).

Together with three known galloylglucoses and six known flavonol glycosides, a new hydrolysable tannin was isolated from the leaves of *A.raddiana*. Degradative studies, in conjuction with 1H, 13C NMR and MS analysis, have shown that the new hydrolysable ellagitannin is 1,3-di-O-galloyl-4,6-(-)-hexahydroxydiphenoyl-beta-glucopyranose. The known compounds are 1-O-galloyl-beta-glucopyranose, 1,6-di-O-galloyl-beta-glucopyranose, 1,3,6-tri-O-galloyl-beta-glucopyranose, isorhamnetin 3-O-rutinoside, quercetin 3-O-rutinoside, quercetin 3-O-gentiobioside, quercetin 3-O-glucosylgalactoside, quercetin 3-O-glucoside and quercetin 3-O-galactoside.

9203-1786 Endo, Y., Ohta, T.(Faculty of Pharmaceutical Sciences, Tohoku University, Aoba-ku, Sendai 980, Japan) **Favelines, novel tricyclic benzocycloheptenes with cytotoxic activities from Brazilian plants, Cridoscolus phyllacanthus.** *Tetrahedron Letters*, v. 32(26): p. 3083-3086, 1991 (4 ref, Eng).

Structures of novel cytotoxic benzocycloheptene derivatives, faveline methyl ether ($C_{19}H_{24}O_2$, mp 135-36 degree C) and deoxofaveline ($C_{18}H_{24}O$, 149-151 degree C) isolated from the bark of Favela (*C.phyllacanthus*) determined on the basis of spectroscopic analysis have been reported. IARI, New Delhi.

9203-1787 Endo, Y., Ohta, T., Nozee, S.(Faculty of Pharmaceutical Sciences, Tohoku University, Aoba-ku, Sendai 980, Japan) **Favelanone, a novel tetracyclic cyclopropane derivative from the Brazilian plant, Cridoscolus phyllacanthus.** *Tetrahedron Letters*, v. 32(40): p. 5555-5558, 1991 (15 ref, Eng).

A novel tetracyclic cyclopropane derivative, favelanone, ($C_{19}H_{22}O_3$; mp 152-53 degree C), having cytotoxic activities, was isolated from the bark of *C.phyllacanthus* and the structure was elucidated on the basis of its spectroscopic data. IARI, New Delhi.

9203-1788 Engel, K.H. , Tressl, R.(Institut fur Biotechnologie, Fachgebiet Chemisch-technische Analyse, Technische Universitat Berlin, Seestrasse 13, D-1000 Berlin 65, Germany) **Identification of new sulfur-containing volatiles in yellow passion fruits (Passiflora edulis f. flavicarpa).** *Journal of Agricultural and Food Chemistry*, v. 39(12): p. 2249-2252, 1991 (13 ref, Eng).

Capillary gas chromatographic analysis of aroma extracts obtained by simultaneous distillation-extraction from yellow passion fruits *P.edulis* f. *flavicarpa* using a flame photometric detector revealed the presence of previously unreported sulfur-containing volatiles. 3-Mercaptohexanol and the acetates, butanoates, and hexanoates of 3-mercaptohexanol and 3-(methylthio)hexanol, respectively, were identified by comparison of chromatographic and mass spectral data with those of synthesized reference compounds. Approximate amounts of these trace constituents in freshly harvested fruits and in commercial passion fruit products were determined. The newly identified compounds, especially the acetates, exhibit powerful sensory properties.

9203-1789 Eugster, C.H., Marki-Fischer, E.(Organisch-Chemisches Institut der Universitat Winterthurerstrasse 190, CH 8057, Switzerland) **Chemistry of rose pigments.** *Angewandte Chemie International Edition in English*, v. 30(6): p. 654-672, 1991 (80 ref, Eng).

Survey of the pigments found in the flowers and fruits of old and modern varieties of roses (*Rosa*) spp. has been presented. A recently elucidated carotenoid degradation sequence follows the scheme C40- C13+C27- C13+C14. The C13 compounds are odoriferous substances that contribute to the scent of roses. Many roses, including the "apothecary's rose", which was once used medicinally, contain large amounts of strongly astringent ellagitannins.

9203-1790 Ezaki, K., Satake, M., Kusumi, T. , Kakisawa, H.(Tsukuba Medicinal Plants Research Station NIHS, Hachimandai, Tsukuba, Ibaraki 305, Japan) **New dihydrophenanth-rapyrans from Cedrelinga catenaefarmis.** *Tetrahedron Letters*, v. 32(24): p. 2793-2796, 1991 (4 ref, Eng).

Isolation and structure elucidation of two new dihydrophenanthrapyrans, cedrelin A and B, isolated from bark of *C.catenaeformis* have been reported. IARI, New Delhi.

9203-1791 Faure, R., Gaydou, E.M.* , Wollenweber, E.(URA 1411 and Laboratorie de Phytochimie de Marseille, Faculte des Sciences et Techniques de Saint-Jerome, Avenue Escadrille Normandie Niemen, 13397 Marseille Cedex 13, France) **Application of inverse-detected two-dimensional heteronuclear-correlated NMR spectroscopy to the complete carbon-13 assignment of isomultiflorenyl acetate.** *Journal of Natural Products*, v. 54(6): p. 1564-1569 , 1991 (13 ref, Eng).

The 13C NMR assignment of a new pentacyclic triterpene, isomultiflorenyl acetate, found in *B.cerifera* fruit, has been resolved using inverse-detected two-dimensional heteronuclear-correlated NMR spectroscopy.

9203-1792 Feliciano, A.S., Miguel del Corral, J.M. , Lopez, J.L., De Pascual-Teresa, B.(Departamento de Quimica Organica, Facultad de Farmacia, 37007 Salamanca, Spain) **Lignans from polar extracts of Juniperus thurifera.** *Phytochemistry*, v. 31(1): p. 267-270, 1992 (5 ref, Eng).

Three new natural lignans, methyl dexypodophyllotoxinate, podophyllotoxinic acid and 7beta-hydroxy-dihydrosesamin, 11 known lignans and two cinnamyl alcohols were isolated and identified from a chloroform extract of *J.thurifera* leaves. Assignment of the 13C NMR spectrum of beta-methyl peltatin B was also performed through direct and long-range heteronuclear 2D NMR analysis, amending previous assignments.

9203-1793 Foo, L.Y., Wong, H.(DSIR Chemistry, Private bag, Petone, New Zealand) **Phyllanthusiin D, an unusual hydrolysable tannin from Phyllanthus amarus.** *Phytochemistry*, v. 31(2): p. 711-713, 1992 (17 ref, Eng).

An unusual ellagitannin was isolated from the biologically active polar fraction of *P.amarus*. Its structure was established as 1-galloyl-2,4-(acetonyl-dehydrohexahydroxydiphenoyl)-3, 6-hexahydroxydiphenoyl-glucopyranoside by chemical and spectroscopic methods.

9203-1794 Fukuyama, Y., Okino, J., Kodama, M.(Faculty of Pharmaceutical Sciences, Tokushima Bunri University, Yamashiro-cho, Tokushima 700, Japan) **Structure of belamcandols A and B isolated from the seed of Belamcanda chinensis.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1877-1879, 1991 (9 ref, Eng).

The structures of belamcandols A and B isolated from the seeds of *B.chinensis* have been assigned to 2,4-dimethoxy-6-((Z)-10'-pentadecenyl) phenol and 1-O-methyl-5((Z)-10'-pentadecenyl)resorcinol, respectively, based on spectroscopic data and chemical degradation. Belamcandol A inhibits 5-lipoxygenase activity at IC50 0.60 micro M.

9203-1795 Garcia, E., Mendoza, V., Guzman, J.A., enriquez, C.E. (Instituto de Investigaciones Quimico-Biologicas, Universidad Michoaccana, P O Box 59A Morelia, Mich., Mexico) **Constituents of Lopezia racemosa.** *Fitoterapia*, v. 62(6): p. 545, 1991 (10 ref, Eng).

From the aerial parts of *L.racemosa*, quercetin, gallic acid, avicularine, ellagic acid and eugenine were isolated.

9203-1796 Garg, S.C., Nakhare, S.(Department of Chemistry, Dr H S Gour Vishwavidyalaya, Sagar- 470003, MP, India) **Studies on the essential oil from the flowers of Eupatorium triplinerve.** *International Symposium on*

Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.24, Oct 21-23, 1991 (Eng).

The essential oil (0.90 percent) from slaty blue flowers of *E.triplinerve* has afforded 39 components, viz., a-pinene, camphene, beta-pinene, sabinene, myrcene, delta-3-carene, a-phellandrene, a terpinene, p-cymeme, limonene, beta-ocimene, a-terpinolene, linalool, a-terpineol, hexanol, g-terpineol, borneol, carvacrol, eugenol, isoeugenol, citral-a, citral-b, fenchone, camphor, thymohydroquinone dimethyl ether, bornyl acetate, linalyl acetate, terpinyl acetate, cubenene, g-murrolene, copaene, bergamotene, beta-caryophyllene, humulene, a-murrolene, beta-salinene, eupatene, eupatol and coumarin alongwith 10 minor components (3.56 percent). The oil has been found to be a very important source of thymohydroquinone dimethyl ether (50.36 percent). The oil exhibited good in vitro efficacy against the bacteria *Bacillus subtillis, Diplococcus pneumonia, Shigella flexneri* and *Vibrio cholerae* and helminths *Asacaris lumbriocoides* and *Taenia solium*. (Abstr. No. C-01).

9203-1797 Giner-Pons, R.M., Gray, A.I.* , Lavaud, C., Massiot, G., Gibbons, S. , Waterman, P.G.*(Departmento de Farmacologia, Facultad de Farmacia, Universitat de Valencia, Avenida Blasco Ibanez 13,46010 Valencia, Spain) **30-Norfriedelane triterpenes from the stem bark of Caloncoba glauca.** *Phytochemistry*, v. 31(1): p. 223-225, 1992 (10 ref, Eng).

The stem bark of *C.glauca* has yielded three friedelane triterpenes of which two are characterized by the loss of C-30 and the presence of a C-27, C-15 lactone. They were identified, with considerable use of long-range C-H coupling studies, as the known compound trichadonic acid (3-oxofriedelan-27-oic acid) and two new 30-norfriedelane derivatives, 3,27-dioxo-30-norfriedelan-20(29)-en-27,15alpha-lactone (caloncobalactone) and 3,27-dioxo-21beta-hydroxy-30-norfriedelan-20(29)-en-17 ,15alpha-lactone (21beta-hydroxycaloncoba lactone).

9203-1798 Goel, C.L., Jain, P.P., Dobhal, N.P., Pal, R., Ayyar, K.S.(Minor Forest Products Division, FRI Dehradun 248006, UP, India) **Chemical characterisation of Abies pindrow Royle seed oil.** *Indian Perfumer*, v. 35(3): p. 144-147, 1991 (10 ref, Eng).

The composition of the essential oil from the seeds of *Abies pindrow* (yield 5.04 percent) has been investigated for the first time by GC. The oil contains alpha-pinene (18.75 percent), beta-pinene (16.71 percent), limonene (48.07 percent) besides 13 other minor compounds. The composition of the fatty oil (28.76 percent) from the essential oil-exhausted seeds is reported for the first time (GC of methyl esters) as palmitic (3.76 percent) palmitoleic (1.00 percent), stearic (1.81 percent), oleic (35-86 percent), linoleic (35.64 percent), linolenic (11.41 percent) acids, besides two unidentified acids.

9203-1799 Gonzalez, A.G., Barrera, J.B. , Davila, B.B., Valencia, E., Dominguez, X.A.*(Centro de Productos Naturales Organicos Antonio Gonzalez, CSIC, Carretera La Esperanza 2, La Laguna 38206 Tenerife, Canary Islands, Spain) **Anthraquinones from Cassia greggii.** *Phytochemistry*, v. 31(1): p. 255-258, 1992 (13 ref, Eng).

The dichloromethane extract of the roots of *C.greggii* afforded seven new anthraquinones: 5-hydroxy-1,4,6,7-tetramethoxy-2-methylanthraquinone, 1,5,7-trihydroxy-4,6-dimethoxy-2-methylanthraquinone, 5,6-dihydroxy-1 ,4, 7-trimethoxy-2-methylanthraquinone, 1-hydroxy-4,7-dimethoxy-5,6-methylenedioxy-2-methylan thraquinone, 5,7-dihydroxy-1,4,6-trimethoxy-2-hydroxymethylanthraquinone, 4,5-dihydroxy-1,6,7-trimethoxy-2-methylanthraquinone, and 5,6-dihydroxy-4,7-dimethoxy-2-methylanthraquinone. Their structures were elucidated on the basis of chemical and spectral data.

9203-1800 Goto, T., Kondo, T.*(Chemical Instrument Center, Nagoya University Chikusa, Nagoya 464, Japan) **Structure and molecular stacking of anthocyanins-flower colour variations.** *Angewandte Chemie International Edition in English*, v. 30(1): p. 17-33, 1991 (128 ref, Eng).

Information on structure and molecular stacking of anthocyanins has been reviewed under the following heads: controversy about blue flower colors, stabilization of anthocyanins, horizontal and vertical stacking of anthocyanins, self-association of anthocyanins, self-association of flavones, copigmentation of flavones with anthocyanins, metalloanthocyanins (structure), structure of polyacylated anthocyanins, and intramolecular sandwich-type stacking of polyacylated anthocyanins. *Commelina communis, Centaurea cyanus, Gentiana makinol, Platycodon grandiflorum, Ipomoea tricolor, I-nil, Zebrina pendula, Lobelia erinus, Delphinium hybridum, Salvia spendens* and *S.farinacea* have been cited as examples of plants yielding these anthocyanins.

9203-1801 Govindachari, T.R., Sandhya, G. , Ganeshraj, S.P. (Agrochemical Research Laboratory, Spic Science Foundation, 110 Mount Road, Guindy, Madras 600032, TN, India) **Isolation of novel azadirachtins H and I by high performance liquid chromatography.** *Chromatographia*, v. 31(5/6): p. 303-305, 1991 (9 ref, Eng).

A high-performance liquid chromatographic procedure for the isolation of azadirachtins A, B, D, H and I has been described. While azadirachtins A, B and D are already known, azadirachtins H and I have been isolated for the first time from *Azadirachta indica* seed kernels. IARI, New Delhi.

9203-1802 Green, T.P., Wiemer, D.F.(Department of Chemistry, University of Iowa, Iowa City, IA 52242, USA) **Four neolignan ketones from Piper capense.** *Phytochemistry,* v. 30(11): p. 3759-3762, 1991 (10 ref, Eng).

Further studies of a chloroform extract of *P.capense* roots have resulted in the isolation and characterization of four new neolignans. Three of these compounds are unusual 2'-oxo-8,1'-neolignans, while the fourth is of the more common 6'-oxo-8.3'-neolignan variety.

9203-1803 Griffin, W.J.(Department of Pharmacy, University of Queensland, Queensland, Australia, 4067) **Alkaloids of a Datura candida cultivar.** *Phytochemistry,* v. 31(1): p. 367-368, 1992 (9 ref, Eng).

F1 progeny of a pink-flowered *D.candida* were cultivated. Although there was some flower colour variation in early stages, over a period of time all plants showed no morphological difference from the parent species which are clonal sterile. Alkaloid analysis showed no chemical variation and it was concluded that the pink-flowered *Datura* was a pure line strain. A new alkaloid was isolated and tentatively identified from GC and NMR data as 6,7-epoxylittorine.

9203-1804 Guldner, A., Winterhalter, P.*(Lehrstuhl fur Lebensmittelchemie, Universitat Wurzburg, Am Hubland 8700 Wurzburg, Germany) **Structures of two new ionone glycosides from quince fruit (Cydonia oblonga Mill.).** *Journal of Agricultural and Food Chemistry,* v. 39(12): p. 2142-2146, 1991 (35 ref, Eng).

The beta-D-gentiobioside {beta-D-glucopyranosyl(1 to 6)-beta-D-glucopyranoside} and the beta-D-glucopyranoside of (3R)-3-hydroxy-beta-ionone have been isolated and characterized in quince *C.oblonga* fruit through spectral NMR, MS) and chemical studies. Model experiments (SDE, pH 3.5) carried out with the aglycon 3-hydroxy-beta-ionone revealed a formation of a number of volatile C_{13} norisoprenoid degradation products, including (E)-3,4-didehydro-beta-ionone and 1,1,6-trimethyl-1,2-dihydronaphthalene (TDN).

9203-1805 Gurdip Singh, Srivastava, P. , Narayanan, C.S., Padmkumari, K.P.(Department of Chemistry, University of Gorakhpur, Gorakhpur 273 009, UP, India) **Chemical investigation of the essential oil of Lantana camara.** *Indian Perfumer,* v. 35(3): p. 140-143, 1991 (17 ref, Eng).

GC/MS analysis on essential oil from leaves of *L.camara* has revealed the presence of 28 components, out of which 21 comprising 91.58 percent of the total oil, have been identified.

9203-1806 Gurdip Singh, Upadhyay, R.K., Rao, G.P.(Department of Chemistry, University of Gorakhpur, Gorakhpur 273009, UP, India) **Chemical and fungitoxic studies on the essential oil of Citrus sinensis and Hyptis suaveolens.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.39,* Oct 21-23, 1991 (Eng).

The essential oils of *C.sinensis* and *H.suaveolens* showed antifungal activity against various sugarcane pathogens and storage fungi. The fungitoxicity of these oils was found to be thermostable and remain unchanged even on autoclaving and storage. These oils have been found to be more potent in comparison to some of the commonly used synthetic fungicides and exhibited no phytotoxic effect on *Vigna radiata.* Thirteen chemical constituents comprising 99.4 percent of the total oil of *C.sinensis* were identified by GC/MS technique. Column chromatography has shown eight pure components of *Hyptis* oil. (Abstr. No. C-16).

9203-1807 Halim, A.F., Abd El-Fattah, H. , El-Gamal, A.A., Thomson, R.H.*(Pharmacognsoy Department, Faculty of Pharmacy, Mansoura University, Mansoura, Egypt) **Anthraquinones from Galium sinaicum.** *Phytochemistry,* v. 31(1): p. 355-356, 1992 (8 ref, Eng).

Phytochemical investigation of the roots of *G.sinaicum* afforded two new anthraquinones identified as 6-hydroxyanthragallol 1,3-dimethyl ether and 6-(or 7)hydroxymethyl-anthragallol 1,3-dimethyl ether in addition to alizarin 1-methyl ether and anthragallol 1,3-dimethyl ether.

9203-1808 Hatano, T., Yazaki, K., Okonogi, A. , Okuda, T.*(Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okayama 700, Japan) **Tannins of Stachyurus species. II. Praecoxins A, B, C and D, four new hydrolyzable tannins from Stachyurus praecox leaves.** *Chemical & Pharmaceutical Bulletin,* v. 39(7): p. 1689-1693, 1991 (18 ref, Eng).

Four new hydrolyzable tannins were isolated from ether and ethyl acetate extracts of the leaves of *S.praecox.* They are praecoxin A($C_{41}H_{28}O_{7}.3H_{2}O$), praecoxin B($C_{34}H_{26}O_{22}.3H_{2}O$), praecoxin C($C_{48}H_{30}O_{30}.5H_{2}O$), and praecoxin D($C_{41}H_{28}O_{7}.3H_{2}O$). Their structures have been elucidated.

9203-1809 Hofmann, L., Fritz, D., Nitz, S. , Kollmansberger, H., Drawert, F.(Lehrstuhl fur Gemusebau, Technische Universitat Munchen, D-8050 Freising-Weihenstephan, Germany) **Essential oil composition of**

three polyploids in the Achillea millefolium 'complex'. *Phytochemistry*, v. 31(2): p. 537-542, 1992 (24 ref, Eng).

Three members of the *A.millefolium* 'complex', the tetraploid variety 'Proa', a hexa-and an octaploid clone, were cultivated in a field experiment. The essential oil was obtained by steam distillation. A total of 149 constituents could be resolved by capillary gas chromatography. Eighty-two of the 118 compounds were identified by GC-MS analysis for the first time in yarrow. Qualitative and quantitative oil differences between the three cultivars are discussed.

9203-1810 Horvat, R.J., Arrendale, R.F., Dull, G.G., Chapman, G.W. , Kays, S.J.(Jr.).(USDA, Agricultural Research Center, P O Box 5677, Athens, GA, 30613, USA) **Volatile constituents and sugars of three diverse cultivars of sweet potatoes (Ipomoea batatas (L.) Lam.).** *Journal of Food Science*, v. 56(3): p. 714-715, 1991 (10 ref, Eng).

Gas-liquid chromatography-mass spectrometric analyses of steam distillates from Jewel, Tainung 57 and a breeding line (No.99) showed qualitative and quantitative differences in constituents. Twenty-one compounds consisting of aldehydes, ketones, furans, pyridine, alcohols, terpenes and palmitic acid were identified. Maltose, sucrose, glucose and fructose were isolated and identified by gas-liquid chromatography. There were no qualitative differences in sugars between the three selections, however, quantitative differences were found in concentration of total sugars. Maltose, the principal sugar formed during cooking, ranged from 0.07 percent in the breeding line No.99 to 5.3 percent in Tainung 57.

9203-1811 Houjiu, W.U., Calvarano, M. , Giacomo, A.D.(Citrus Research Institute of Chinese Academy of Agricultural Sciences, 630 712, Chongqing, China) **Some flavanones in the peel of ten Citrus species and varieties in China.** *Essenze Derivati Agrumari*, v. 61(2): p. 103-112, 1991 (14 ref, Eng).

Presence of naringin, hesperidin and neohesperidin in the peels of ten citrus species and varieties determined by HPLC is reported. The concentration of flavanones in peel was found to decrease as fruits matured. Their potential economic and taxonomic significances are discussed.

9203-1812 Idaka, K., Hirai, Y., Shoji, J.*(School of Pharmaceutical Sciences, Showa University, Hatanodai, Shinagawa-ku, Tokyo 142, Japan) **Studies on the constituents of Palmae plants. V. Steroid saponins and flavonoids of leaves of Phoenix rupicola T.Anderson, P.lureirii Kunth, P.reclinata N.J. Jacquin and Arecastrum romanzoffianum Beccari.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1455-1461, 1991 (13 ref, Eng).

Steroid saponins and flavonoids of leaves of *P.rupicola, P.loureirii, P.reclinata* and *A.romanzoffianum* have been investigated. Tricin 7-O-beta-D-glucopyranoside (I), vitexin(II), methyl proto-Pb(VII), methyl proto-taccaoside (26-O-D-glucopyranosyl (25S)-22-O-methyl-furost-5-en-3beta,26-diol 3-O-{alpha-L-rhamnopyransoyl-(1 to 2)} {alpha-L-rhamnopyransoyl-(1 to 3)}-beta-D-glucopyranoside, VI), and methyl proto-rupicolaside (26-O-beta-D-glucopyranosyl (25S)-22-O-methy-furost-5-en-3beta,26-diol 3-O-{beta-D-glucopyranosyl-(1 to 2)-alpha-L-rhamnopyranosyl-(1 to 4)-alpha-L-rhamnopyranosyl-(1 to 4)}{alpha-L-rhamnopyranosyl-(1 to 2)}-beta-D-glucopyranoside, VIII) from *P.rupicola*, II, glucoluteolin(III), orientin (IV),isoorientin (V), VII, VIII, and methyl proto-loureiroside (26-O-beta-D-gluycopyranosyl(25R)-22-O-methyl-furost-5-en-3beta,26 -diol 3-O-{beta-D-glucopyranosyl-(1 to 5)-alpha-L-arabinofuranosyl-(1 to 4)}{alpah-L-rhamnopyranosyl-(1 to 2)-beta-D-glucopyranoside, IX) from *P.loureirii*, VII, VIII and methyl proto-reclinatoside (26-O-beta-D-glucopyranosyl (25S)-22-O-methyl-furost-5-en-3betam,26-diol 3-O-{alpha-L-rhamnopyranosyl-(1 to 5)-alpha-L-arabinofuranosyl-(1 to 4)}{alpha-L-rhamnopyranosyl(1 to 2)}-beta-D-glucopyranoside, X) from *P.reclinata*, III and VII from *A.romanzoffianum* were isolated and identified.

9203-1813 Inada, A., Nakamura, Y., Konishi, M., Murata, H., Kitamura, F., Toya, H. , Nakanishi, T.(Faculty of Pharmaceutical Sciences, Setsunan University, 45-1 Nagaotoge-cho, Hirakata, Osaka 573-01, Japan) **A new ionone glucoside and a new phenylpropanoid rhamnoside from stems of Ampelopsis brevipedunculata (Maxim.) Trautv..** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2437-2439, 1991 (19 ref, Eng).

A new ionone ($C_{19}H_{30}O_9$) glucoside and a new phenylpropanoid rhamnoside, termed ampelopsisionoside ($C_{19}H_{32}O_8$) and ampelopsisrhamnoside ($C_{19}H_{30}O_9$), respectively, have been isolated from stems of *A.brevipedunculata* and their structures have been established based on lines of chemical and spectral evidence. Four known glycosides, tachioside, isotachioside, lyoniside, and 2-phenylethyl-D-rutinoside, were also isolated.

9203-1814 Inose, Y., Miyase, T.*, Ueno, A.(School of Pharmaceutical Sciences, University of Shizuoka, 395, Yada, Shizuoka 422, Japan) **Studies on the constituents of Solidago virga-aurea L.I. Structural elucidation of saponins in the herb.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2037-2042, 1991 (8 ref, Eng).

Nine new oleanane-type saponins, solidagosaponins I-IX (1-9), were isolated from *S.virga-aurea*. These saponins, except 9, have a sugar chain at the 16 position of the aglycone. Moreover, four of them contain a beta-hydroxy butyrate group at a portion of the sugar chain. The structures of these compounds were established on the basis of spectroscopic and chemical evidence.

9203-1815 Ishiguro, K., Nagata, S., Fukumoto, H., Yamaki, M., Takagi, S., Isoi, K.(Faculty of Pharmaceutical Sciences, Mukogawa Women's University, Koshien Kyuban-cho, Nishinomiya, Hyogo 663, Japan) **A dipeptide derivative from Hypericum japonicum.** *Phytochemistry*, v. 30(11): p. 3639-3641, 1991 (7 ref, Eng).

The structure of a novel peptide analogue saropeptate, N-benzoyl-L-phenylalanyl-L-phenylalaninol acetate, isolated from the whole plant of *H.japonicum* was elucidated by spectroscopic analysis and its absolute configuration determined by comparison with four synthetic diastereoisomers.

9203-1816 Ishii, H., Kobayashi, J.I. , Ishikawa, T.(Faculty of Pharmaceutical Sciences, Chiba University, 1-33, Yayoi-cho, Chiba 260, Japan) **Toddacoumalone, a novel mixed diner of coumarin and quinolone from Toddalia asiatica(L.) Lam. (T.aculeata Pers.).** *Tetrahedron Letters*, v. 32(47): p. 6907-6910, 1991 (16 ref, Eng).

The spectroscopic structural eludidation of toddaconmalone ($C_{31}H_{31}NO_6$; mp 202-204 degree C), a novel mixed dimer of coumarin and quinolone, isolated from root bark of *T.asiatica* is described. IARI, New Delhi.

9203-1817 Ito, C., Nakagawa, M., Wu, T.S. , Furukawa, H.*(Faculty of Pharmacy, Meijo University, Tempaku-ku, Nagoya 468, Japan) **New carbazole alkaloids from Murraya euchrestifolia.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1668-1671, 1991 (6 ref, Eng).

Seven new carbazole alkaloids, named pyrayafolines-B, -C, and -D, and euchrestines-A, -B, and -C, and -D were isolated from stem bark of *M.euchrestifolia* collected in Taiwan and their structures were characterized by means of spectral methods. Pyrayafoline-B was also synthesized.

9203-1818 Itokawa, H., Kishi, E., Morita, H. , Takeya, K., Iitaka, Y.(Tokyo College of Pharmacy, Horinouchi 1432-1, Hachioji, Tokyo 192-03, Japan) **Eurylene, a new squalene-type triterpene from Eurycoma longifolia.** *Tetrahedron Letters*, v. 32(15): p. 1803-1804, 1991 (7 ref, Eng).

Structure elucidation of a new cytotoxic squalene-type triterpene, named eurylene ($C_{34}H_{58}O_8$, mp 146-48 degree C), isolated from woods of *E.longifolia* has been reported. The absolute stereostructure was determined by an advanced Mosher's method. IARI, New Delhi.

9203-1819 Itokawa, H. , Shirota, O., Ikuta, H., Morita, H., Takeya, K., Iitaka, Y.(Department of Pharmacognosy, Tokyo College of Pharmacy, Horinouchi 1432-1, Hachioji, Tokyo 192-03, Japan) **Triterpenes from Maytenus ilicifolia.** *Phytochemistry*, v. 30(11): p. 3713-3716, 1991 (17 ref, Eng).

Two new friedelane-type triterpenes, D:A-friedoolean-24-al-3-en-3-ol-2-on-29-oic acid and D:A-friedoolean-1-en-29-ol-3-one, named as cangoronine and ilicifoline respectively, in addition to seven known friedelane, pristimerin- and tingenone type triterpenes have been isolated from *M.ilicifolia*. The structures were established by spectroscopic and X-ray analyses. The cytotoxic activities of these compounds are also reported.

9203-1820 Jaggi, R.K., Kapoor, V.K.(Department of Pharmaceutical Sciences, Punjab University, Chandigarh 160014, India) **Diosgenin- its occurrence in nature and production.** *Indian Drugs*, v. 29(5): p. 191-218, 1992 (345 ref, Eng).

A comprehensive account of the occurrence of disgenin in world flora and its production through tissue culture has been given.

9203-1821 Jain, N., Alam, M.*, Kamil, M. , Ilyas, M., Ali, M. (Department of Chemistry, Aligarh Muslim University, Aligarh 202002, UP, India) **A coumarin from Setaria italica.** *Phytochemistry*, v. 30(11): p. 3826-3827, 1991 (5 ref, Eng).

A new coumarin named setarin has been isolated from the leaves of *S.italica* and its structure elucidated as 4-propenoxycoumarin on the basis of spectral and chemical analysis.

9203-1822 Jain, N., Shahoo, R.K., Sondhi, S.M.(Department of Chemistry, University of Roorkee, Roorkee 247 667, UP, India) **Analysis for mineral elements of some medicinal plants.** *Indian Drugs*, v. 29(4): p. 187-190, 1992 (19 ref, Eng).

Seventeen plant species analysed for various mineral elements were found to have Ca, Cu, Fe, Mg, Zn, Ba, K, Na, Mn and Al as the common mineral elements.

9203-1823 Jain, S., Shukla, K., Bhakuni, D.S.(Central Drug Research Institute, Lucknow 226 001, UP, India) **Minor alkaloids of Cocculus pendulus.** *Fitoterapia*, v.62(5): p. 391-395, 1991 (8 ref, Eng).

Ten minor bisbenzylisoquinoline alkaloids have been isolated from the leaves and stems of *C.pendulus*. Of these, six are new bases designated as N-norcocsulinin, cocsiline, O-methylcocsulinin, nortrilobine, and pendilinine. Two minor known bisbenzylisoquinoline alkaloids, isolated for the first time from the plant, are trilobine and O,O-dimethylcocsulinin and two known alkaloids, tetrandrine and isotrilobine were isolated for the second time from the plant.

9203-1824 Jia, Z.J. , Zhao, Y., Tan, R.X. , Li, Y.(State Key Laboratory of Applied Organic Chemistry at Lanzhou University, Lanzhou 730,000, PR China) **Sesquiterpenes and other constituents from Ligularia veitchiana.** *Phytochemistry*, v. 31(1): p. 199-201, 1992 (13 ref, Eng).

The alcoholic extract of *L.veitchiana* afforded, in addition to several more widespread known compounds, one new lipidol and two eremophilane derivatives. The structures were elucidated by spectroscopic methods and chemical transformations.

9203-1825 Ju-Ichi, M., Takemura, Y., Azuma, M., Tanaka, K., Okano, M., Fukamiya, N. , Ito, C., Furukawa, H.(Faculty of Pharmaceutical Sciences, Mukogawa Women's University, Nishinomiya, Hyogo 663, Japan) **New coumarins from Citrus hassaku.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2252-2255, 1991 (6 ref, Eng).

Five new coumarins named nordenletin (1), oxanordentatin (3), oxaclausarin (4), seselinol (6), and seselinol isovalerate (8) were isolated from the roots of *C.hassaku* and their structures were elucidated on the basis of spectrometric analyses.

9203-1826 Kakuno, T., Yoshikawa, K., Arihara, S.(Faculty of Pharmaceutical Sciences, Tokushima-Bunri University, Tokushima-shi, Tokushima 770, Japan) **Ilexosides A, B, C and D, antiallergic 18,19-seco-ursane glycosides from fruits of Ilex crenata.** *Tetrahedron Letters*, v. 32(29): p. 3535-3538, 1991 (4 ref, Eng).

Structures of four novel 18,19-seco-ursane glycosides viz., A, B, C and D isolated from *I.crenata* fruits were established as novel glycosides of 3beta-hydroxy-19-oxo-18, 19-seco-11, 13(18)-ursadiene-28-oic acid on the basis of chemical and spectroscopic analysis. They exhibited antiallergic activities. IARI, New Delhi.

9203-1827 Kang, S.S., Woo, W.S.(Natural Products Research Institute, Seoul National University, 28 Yeunkun-dong, Chongno-ku, Seoul 110 460, Korea) **Phytolaccoside I, a new saponin from Phytolacca americana.** *Fitoterapia*, v. 62(6): p. 532-533, 1991 (10 ref, Eng).

A new saponin, phytolaccoside I, ($C_{47}H_{74}O_{19}$; mp 250-53 degree C) has been isolated from the roots of *P.americana*. Its structure was determined as 3-O-{alpha-L-rhamnopyranosyl-(1-2)-beta-D-glucopyranosyl-(1-2)-beta- D-xylopyranosyl}-esculentic acid by spectral data and chemical correlations.

9203-1828 Kapooor, V.P., Farooqi, M.I.H.(Natural Polymer Chemistry, National Botanical Research Institute, Lucknow 226001, UP, India) **Viscosity and interaction studies of some seed galactomannans from Cassia species.** *Research and Industry*, v. 36(4): p. 277-278, 1991 (8 ref, Eng).

Water soluble gums from seed endosperms of eleven *Cassia* species i.e. *C.absus, C.fistula, C.javanica, C.laevigata, C.marginata, C.multijuga, C.nodusa, C.occidentalis, C.renigera, C.siamea* and *C.surantensis* have been isolated and subjected to viscosity studies for their 1.0 and 2.0 percent solutions at different conditions. For 1 percent solution, *C.javanica* and *C.renigera* have shown appreciable high viscosity, whereas *C.nodusa, C.fistula* and *C.siamea* afforded high viscosity for 2 percent solution. During interaction studies of 1 percent solutions *C.fistula* and *C.marginata* seed gums have resulted into gels with 1 percent microbial xanthan gum.

9203-1829 Karlicek, R., Dolejsova, J.(Department of Analytical Chemistry, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechslovakia) **Content of nitrities and nitrates in the individual morphological parts of Coronilla varia L. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of the Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 106-107, 1989 (Eng).

The relatively large content of nitrites in leaf, stem, inflorescence and fruits of *C.varia* is striking especially in comparison with other plants. It can be related to the biosynthesis of 3-nitroproionic acid and to the toxicity of the plant for some animal species.

9203-1830 Kasai, R., Hirono, S., Chou, W.H. , Tanaka, O., Chen, F.H.(Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi, Minami-ku, Hiroshima 734, Japan) **An additional sweet dihydroflavonol glycoside from leaves of Engelhardtia chrysolepis, a Chinese folk medicine, Huang-qi.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1871-1872, 1991 (4 ref, Eng).

From leaves of *E.chrysolepis*, which have been used as a sweet tea in China, a sweet dihydroflavonol glycoside, as been isolated and its structure was elucidated on the basis of chemical and spectral evidence as 3-O-beta-D-glucopyranosyl(1 to 3)-alpa-L-ramnopyranosyl-(2R,3R)-taxifolin.

9203-1831 Kaul, V.K., Weyerstahl, P.(Institute fur Organische Chemie, Tecgnische Universitat Berlin D-1000, Berlin 12, FRG) **Composition of the essential oil of new Artemisia species from Kashmir.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.31*, Oct 21-23, 1991 (Eng).

A.moorcroftiana a new species of this large genus grows wild in the mountainous region of Gulmarg in Kashmir. The composition of its steam distilled oil was studied by capillary gas chromatography using CP SIL 5 CB fused silica capillary column, 1H NMR and by computerised GC-MS. Besides the known 1-a-oxolongipinene, a new sesquiterpene alcohol, longipinene-7-ol (1.9 percent) in standard GNC of the total oil) was isolated from the high boiling fraction and its structure elucidated by 1H, 13C NMR and by high resolution MS. In all 56 constituents were identified representing 90 percent of the oil. The main constituent is a thujone (12.9 percent). The oil has fresh, typical herbaceous and urinous odour. (Abstr. No.C08).

9203-1832 Kihara, M., Konishi, K., Xu, L. , Kobayashi, S.(Faculty of Pharmaceutical Sciences, The University of Tokushima, Sho-machi, Tokushima 770, Japan) **Alkaloidal constituents of the flowers of Lycoris radiata Herb. (Amaryllidaceae).** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1849-1853, 1991 (23 ref, Eng).

A new alkaloid, hippeastrine N-oxide ($C_{17}H_{17}NO_6$) was isolated from the flowers of *L.radiata* together with the known alkaloids galanthamine N-oxide, lycoramine N-oxide, galanthamine, lycoramine, hippeastrine, O-methyllycorenine N-oxide, O-methyllycorenine, homolycorine N-oxide, homolycorine, O-demethyllycoramine, vittatine, tazettine, lycorine, haemanthidine, and O-demethylhomolycorine, as well as dipalmitoylphosphatidylcholine and 1-palmitoyl-2-linoleoylphosphatidyl-choline.

9203-1833 Kikuchi, Y., Miyaichi, Y., Tomimori, T.*(School of Pharmacy, Hokuriku University, 3 Ho Kanagawa-machi, Kanazawa 920-11, Japan) **Studies on Nepalese crude drugs. XIV. New flavonoids from the root of Scutellaria prostrata Jacq. ex Benth.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1466-1472, 1991 (10 ref, Eng).

Six flavonoids, named scutellaprostins A, B, C, D, E and F, were isolated from the root of *S.prostrata*. Their structures were established by chemical and spectral data. They were synthesized by oxidative coupling of the flavones and coniferyl alcohol in the presence of silver oxide.

9203-1834 Kikuzaki, H., Kobayashi, M. , Nakatani, N.(Department of Food and Nutrition, Faculty of Science of Living, Osaka City University, Sumiyoshi-ku, Osaka 558, Japan) **Diarylheptanoids from rhizomes of Zingiber officinale.** *Phytochemistry*, v. 30(11): p. 3647-3651, 1991 (8 ref, Eng).

Six new diarylheptanoids, 5-hydroxy-7-(4-hydroxyphenyl)-1-(4-hydroxy-3-methoxyphenyl)-3-heptanon e, 3,5-diacetoxy-7(3,4-dihydroxyphenyl)-1-(4-hydroxy-3-methoxyphenyl)hept ane, 5-hydroxy-1-(4-hydroxy-3,5-dimethoxyphenyl)-7-(4-hydroxy-3-methoxyphen yl)-3-heptanone, 5-hydroxy-7-(4-hydroxy-3,5-dimethoxyphenyl)-1-(4-hydroxy-3-methoxyphenyl)-3-heptanone. (3R,5S)-3,5-dihydroxy-1,7-bis(4-hydroxy-3-methoxyphenyl)heptane and (3S,5S)-3,5-diacetoxy-1,7-bis(3,4-dihydroxyphenyl)heptane were isolated from the rhizomes of *Z.officinale*, together with two known diarylheptanoids. Their structures were established by chemical and spectroscopic evidences.

9203-1835 Kishor, N., Sati, O.P.*, Sakakibara, J., Kaiya, T. (Department of Chemistry, University of Garhwal, Srinagar, UP, 246 174, India) **Spirostanol glycoside from Yucca aloifolia.** *Phytochemistry*, v. 31(2): p. 706-707, 1992 (10 ref, Eng).

From an ethanolic extract of the inflorescence of *Y.aloifolia* a new spirostanol glycoside has been isolated and characterized as 3-O-{alpha-L-rhamnopyranosyl(1 to 3)-beta-D-xylopyranosyl)1 to 2)} {beta-D-glucopyranosyl (beta-D-glucopyranosyl (1 to 3)-beta-D-glucopyranosyl)-25R,5alpha-spirostan-2alpha, 3beta-diol.

9203-1836 Kisiel, W.(Institute of Pharmacology, Polish Academy of Sciences, Department of Phytochemistry, 31-343 Krakow, Poland) **Guaianolides from Picris altissima.** *Phytochemistry*, v. 31(1): p. 328-329, 1992 (8 ref, Eng).

The aerial parts of *P.altissima* afforded in addition to dehydrocostus lactone, three closely related C-3 and C-10 oxygenated guaianolides, two of them were isolated for the first time from a plant source. The structures were determined on the basis of their spectral data.

9203-1837 Kiuchi, F., Ohba, Y.A., Mikage, M. , Namba, T., Tsuda, Y.*(Faculty of Pharmaceutical Sciences, Kanazawa University, 13-1 Takara-machi, Kanazawa 920, Japan) **Identification of major constituents of a Saussurea gossypiphora collected in Himalaya.** *Shoyakugaku Zasshi*, v. 45(3): p. 274-278, 1991 (9 ref, Eng).

From a chloroform extract of the aerial parts of *S.gossypiphora* collected in Himalaya, hydrocarbons (heptacosane, nonacosane, and hentriacotane), triterpenes (alpha-amyrin, beta-amyrin, and lupeol), and their acetates and palmitates were isolated and identified. Fructose, glucose and sucrose were also identified in the ethanol extract.

9203-1838 Kohda, H., Tanaka, S., Yamaoka, Y. , Izumi, H., Nuno, M. , Isoda, S. , Gotoh, K., Watanabe, T., Katsuki, S. , Satake, M. (Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi, Minami-ku, Hiroshima 734 Japan) **Chikusetsusaponin. VI. A new saponin from the rhizome of Panax pseudoginseng var. angustatus Hara.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1588-1590, 1991 (9 ref, Eng).

A novel saponin named chikusetsusaponin VI was isolated from the rhizome of *P.pseudo-ginseng* var.*angustatus* and its structure was determined as 20(S)-protopanaxadiol 3-O-beta-D-glucopyranosyl(1-2)-{beta-D-xylopyranosyl-(1-6)}-beta-D-g lucopyranosido-20-O-beta-D-glucopyranosyl(1-6)-beta-D-glucopyranoside.

9203-1839 Koike, K., Ishii, K., Mitsunaga, K. , Ohmoto, T.*(School of Pharmaceutical Sciences, Toho University, 2-2-1 Miyama, Funabashi, Chiba 274, Japan) **New quassinoids from Picrasma javanica. Structures of javanicins U, V, W, X and Y.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2021-2023, 1991 (5 ref, Eng).

Five new quassinoids, javanicins U, V, W, X and Y were isolated from *P.javanica* collected in Indonesia. Their structures were determined by spectroscopic evidence.

9203-1840 Kouno, I., Hashimoto, M., Enjoji, S., Takahashi, M., Kaneto, H., Yang, C.S.(Faculty of Pharmaceutical Sciences, Nagasaki University, Nagasaki 852, Japan) **Isolation of neoanisatin derivatives from the pericarps of Illicium majus with other constituents.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1773-1778, 1991 (12 ref, Eng).

Further studies on the constituents of *I.majus* have resulted in the isolation of five new neoanisatin derivatives and two known phytoquinoids together with two known neolignans.Two of the neoanisatin derivatives are 1-hydroxyl, which are the first examples isolated anisatin derivatives so far. Another one, 2-oxoneoanisatin, exhibited picrotoxin-like convulsions in mice, the same as anisatin. The other two 3,4-dehydroxy-2-oxoneoanisatin isomers could not be separated from each other, even with high performance liquid chromatography.

9203-1841 Koyama, J., Okatani, T., Tagahara, K., Kouno, I., Irie, H.(Kobe Women's College of Pharmacy, Kobe, 658, Japan) **Anthraquinones of Damnacanthus indicus.** *Phytochemistry*, v. 31(2): p. 709-710, 1992 (7 ref, Eng).

A new anthraquinone, 5-hydroxy-1,2-methylenedioxyanthraquinone, along with three known anthraquinones, damnacanthal, juzunol, and damnacanthol, and four artificial anthraquinones were isolated from the rhizomes of *D.indicus* grown in Japan. The new anthraquinone was characterized as 5-hydroxy-1,2-methylenedioxyanthraquinone by comparison of its methyl ether with synthetic 5-methoxy-1,2-methylenedioxyanthraquinone.

9203-1842 Kreis, P., Juchelka, D., Motz, C. , Mosandl, A.* (Institut fur Lebensmittelchemie, Johann Wolfgang Goethe-Universitat, Robert-Mayer-Strasse 7-9, Postfach 111932, 6000 Frankfut/M.11, Germany) **Chiral compounds of essential oils, IX: Stereodifferentiation of borneol, isoborneol and bornylacetate.** *Deutsche Apotheker Zeitung*, v. 131(39): p. 1984-1987 , 1991 (16 ref, Ger, Eng).

Borneol and isoborneol were separated from essential oils of *Thymus vulgaris*, *T.serpyllum*, *T.zygis*, *Rosmarinus officinalis* and *Valeriana* spp by means of TLC, and directly stereoanalyzed after solvent extraction, using permethylated beta-cycoldextrin as the chiral stationary phase. The enantiomer distribution of bornylacetate has been analyzed by reductive ester cleavage and subsequent stereoanalysis of the corresponding borneol. 2-Norborneol and 2-methylisoborneol have also been separated into the mirror images without any derivatization.

9203-1843 Kuang, H.X., Shao, C.J., Kasai, R.* , Ohtani, K., Tian, Z.K., Xu, J.D. , Tanaka, O.(Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi, Minami-ku, Hiroshima 734, Japan) **Phenolic glycosides from roots of Adenophora tetraphylla collected in Heilongjiang, China.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2440-2442, 1991 (8 ref, Eng).

A.tetraphylla(=A.triphylla), is a source of the traditional Chinese medicine "Shashen". From the roots of this plant, three new phenolic glycosides, called shashenosides I, II and III (2-4) were isolated together with siringinoside, beta-sitosteryl-beta-D-glucoside, linoleic acid and methyl stearate. The common aglycone of 2, 3 and 4 was identified as 3-methoxy-5-(2'-propenyl)-1,2-benzenediol {=1-O-methyl-5-(2'-propenyl)-pyrogallol=6-hydroxyeugenol, 6}, and the structures of 2 and 3 were elucidated as 2,3-di-O-beta-glucopyranoside and 3-O-alpha-arabinopyranosyl-(1 to 6)-beta-glucopyranoside of 6, respectively. Shashenoside

III (4) was formulated as 2-O-beta-glucopyranoside of 3. No saponin was found in the roots.

9203-1844 Kuo, M.C., Ho, C.T.*(Department of Food Science, Cook College, New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, New Jersey 08903, USA) **Volatile constituents of the distilled oils of Welsh onions (Allium fistulosum L. variety Maichuon) and Scallions (Allium fistulosum L. variety Caespitosum).** *Journal of Agricultural and Food Chemistry*, v. 40(1): p. 111-117, 1992 (27 ref, Eng).

Volatile components were isolated from Welsh onions and scallions by steam distillation at atmosphere pressure and analyzed by GC and GC-MS. Sulfur-containing compounds account for 87 percent and 82 percent of the total volatiles in the distilled oils of Welsh onions and scallions, respectively. In addition to the sulfur compounds commonly reported in the genus *Allium* 41 novel volatile sulfur-containing components were found in the distilled oils of green onions. The novel compounds can be grouped as (1) 1-{alk-(en)ylthio}alkyl alk(en)yl disulfides, (2) alkyl tetra- or pentathiaalkanes or alkene(s), and (3) thiaheterocycles. Heat may be responsible for the formation of many of the sulfur-containing volatiles in green onion distilled oils. Some of the novel polysulfides identified have sweet, scallion-like or onion-like odors.

9203-1845 Lami, N., Kadota, S., Kikuchi, T.*(Research Institute for Wakan-Yaku (Oriental Medicines), Toyama Medical and Pharmaceutical University, 2630, Sugitani, Toyama 930-01, Japan) **Constituents of the roots of Boerhaavia diffusa L. IV. Isolation and structure determination of boeravinones D, E, and F.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1863-1865, 1991 (8 ref, Eng).

Three new rotenoids designated as boeravinones D ($C_{18}H_{14}O_7$), E($C_{17}H_{12}O_7$), and F($C_{17}H_{10}O_7$) have been isolated from the methanol extract of the roots of *B.diffusa* and their structures were determined based on spectral and chemical evidence.

9203-1846 Lawrence, B.M.(RJR Tobacco Company, Bowman Gray Technical Center, P.O. Box 2959, Winston-Salem, NC 27102, USA) **Progress in essential oils.** *Perfumer & Flavorist*, v. 17(1): p. 45-56, 1992 (44 ref, Eng).

Recent developments in the chemistry of the essential oils of lemon *(Citurs spp)*, savory (*Satureja montana*), annual wormwood *(Artemisia annua)*, caraway *(Carum carvi)* and rose *(Rosa spp)* have been reviewed.

9203-1847 Lemberkovics, E., Petri, G., Dien Hang, N.K., Tarr, K., Biacsi, E.(Institute of Pharmacognosy Semmelweis Medical University, H-1085 Budapest, Ulloi ut 26 Hungary) **Formation of essential oil content and composition of Ocimum basilicum L. during the flowering.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.32*, Oct 21-23, 1991 (Eng).

The changes in the essential oil content and composition in *O.basilicum* cultivated in Hungary at various stages of flowering, has been studied. The essential oil obtained with water/steam distillation from the plant and the total oil content was measured. Linalool was the main component, besides alpha-, beta-pinenes, camphene, myrcene, alpha-terpineol, terpineol-4, geraniol, bornyl-acetate, carvone monoterpenes as well as estragol, carvacrol, p-cymene, eugenol (in traces) and some sesquiterpenes, cadinene, alpha-bergamotene, alpha-cedrene, muurolene, alpha-bisabolol, beta-caryophyllene) and 3 sesquiterpene hydrocarbons of unknown structure, were obtained. It was established that the essential oil content as well the oil composition changes during the flowering but the characteristics of oil composition do not change. (Abstr. No. C-09).

9203-1848 Li, L., Wang, H.K., Fujioka, T. , Chang, J.J., Kozuka, M., Konoshima, T. , Estes, J.A., McPhail, D.R., McPhail, A.T. , Lee, K.H.(Natural products Laboratory, Division of Medicinal Chemistry and Natural Products, School of Pharmacy, University of North Carolina, Chapel Hill, North Carolina 27599, USA) **Structure and stereochemistry of amorphispironone, a novel cytotoxic spironone type rotenoid from Amorpha fruticosa.** *Journal of the Chemical Society, Chemical Communications* , No22, p. 1652-1653, 1991 (7 ref, Eng).

Amorphispironone ($C_{23}H_{22}O_7$, mp 152-52.5 degree C) has been isolated from the leaves of *A.fruticosa* and its structure and stereochemistry have been established from spectral data in conjunction with single-crystal X-ray analysis.

9203-1849 Li, M.F., Hirata, Y., Xu, G.J. , Niwa, M., Wu, H.M. (China Pharmaceutical University, Nanjing 210 009, China) **Studies on the chemical constituents of Dendrobium loddigesii Rolfe.** *Acta Pharmaceutica Sinica*, v. 26(4): p. 307-310, 1991 (4 ref, Chi, Eng).

According to IR, UV, MS and NMR spectra of the compounds isolated from the fresh stem of *D.loddigesii*(Chinese medicine), 3-constituents were identified. They are shihunidine, shihunine and dendrophenol (4,4'-dihydroxy-3,3',5-trimethoxybibenzyl). Chemical reactions showed that shihunidine was derived from shihunine during isolation. Shihunidine and shihunine were shown to be inhibitors of Na+, K+-ATPase of the rat kindney.

9203-1850 Li, Y.W., Fang, Q.C.(Institute of Materia Medica, Chinese Academy of Medical Sciences, Beijing 100 050, China) **Isoquinoline alkaloids from Corydalis thyrsiflora Prain.** *Acta Pharmaceutica Sinica*, v. 26(4): p. 303-306, 1991 (7 ref, Chi , Eng).

From the whole plant of *C.thyrsiflora*, an herbal medicine used in Tibet, 12 isoquinoline alkaloids were isolated and identified as protopine, dl-tetrahydrocoptisine, l-sinactine, l-cavidine, d-bicuculline, d-corlumine, sibiricine, ochotensine, dihydrosanguinarine, 8-acetonydihydrosanguinarine, d-adlumidine, and fumaramine. The structure determination was based on spectral analysis and on the comparison of physical and spectral data with those of authentic standards or those published in literature. In addition, the structure of fumaramine was confirmed by chemical transformation from bicuculline.

9203-1851 Li, Y.Z., Chen, Y.Z.(Department of Chemistry, Lanzhou University, Lanzhou 730000, PR, China) **Diterpenoids from Rabdosia parvifolia.** *Phytochemistry*, v. 31(1): p. 221-222, 1992 (6 ref, Eng).

From the leaves of *R.parvifolia*, two new ent-kaurene type diterpenoids, parvifoline A and parvifoline B, along with a known ent-kaurene type diterpenoid rabdoloxin B have been isolated. Their structures were established by spectroscopic means and by comparison.

9203-1852 Lin, M., Li, J.B., Li, S.Z. , Yu, D.Q., Liang, X.T. (Institute of Materia Medica, Chinese Academy of Medical Sciences, 1 Xian Nong Tan Street, Beijing 100 050, People's Republic of China) **Dimeric stilbene from Gnetum parvifolium.** *Phytochemistry*, v. 31(2): p. 633-638, 1992 (7 ref, Eng).

Ten constituents have been isolated from lianas of *G.parvifolium*. Two novel dimeric stilbenes, gnetifolin C and D, a new stilbene glucoside and flavone, gnetifolin E and B have been identified along with six known compounds. Their structures were deduced on the basis of spectroscopic evidence.

9203-1853 Lins Brandao, M.G., Lacaille-Dubois, M.A.* , Teixera, M.A., Wagner, H.(Laboratorio de Farmacognosia, Faculdade de Farmacia, Universidade Federal de Minas Gerais, 30180 Belo-Horizonte, Brasil) **Triterpene saponins from the roots of Ampelozizyphus amazonicus.** *Phytochemistry*, v. 31(1): p. 352-354, 1992 (16 ref, Eng).

A new triterpene saponin was isolated from the roots of *A.amazonicus* together with the known 3-O-beta-D-glucopyranosyl-20-O-alpha-L-rhamnopyranosyljujubogenin and the known triterpenes melaleucic acid, 3beta,27alpha-dihydroxylup-20(29)-en-28beta-oic acid, betulinic acid, betulin, lupeol. The structure of this saponin was elucidated as 3-O-{beta-D-glucopyranosyl(1 to 2) alpha-L-arabinopyranosyl}-20-O-alpha-L-rhamnopyranosyljujubogenin by spectral analysis and chemical transformations.

9203-1854 Liu, C., Xu, J.F., He, Q.M. , Yu, Q.S.(South China Institute of Botany, Academia Sinica, 510 650 Guangzhou, Guangdong, People's Republic of China) **Chemical components of Liquidamber formosana H. resin.** *Youji Huaxue*, v. 11(5): p. 508-510, 1991 (3 ref, Eng, Chi).

Bornyl trans-cinnamate and two pentacyclic triterpene aldehydes viz., liquidambronal and ambronal have been isolated from the resin of *L.formosana* and identified.

9203-1855 Long, M., Benn, M., Majak, W. , McDiarmid, R.(Chemistry Department, The University of Calgary, Calgary, Alberta, Canada T2N1N4) **3-Nitropropyl glycosides of Astragalus miser var. serotinus.** *Phytochemistry*, v. 31(1): p. 321-323, 1992 (15 ref, Eng).

On the basis of specteroscopic and chemical evidence, 3-nitropropyl beta-D-cellobioside was identified among the toxic glycosides produced by *A.miser* var. *serotinus* and its structure confirmed by synthesis, as was that of the beta-D-gentiobioside previously isolated from this plant.

9203-1856 Lou, H., Li, X., Onda, M. , Konda, Y., Urano, M., Harigaya, Y.* , Takayanagi, H., Ogura, H.(School of Pharmaceutical Sciences, Kitasato University, Minato-ku, Tokyo 108, Japan) **Stereochemistry of novel triterpenes from Cynanchum hancokianum.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2271-2276, 1991 (10 ref, Eng).

The absolute stereochemistry of hancokinol, hancolupenone, hancolupenol, hancolupenol hexacosanoate, which are novel triterpenes, from *C.hancokianum* has been elucidated by means of NMR and circular dichroism analyses.

9203-1857 Lu, T.S., Saito, N., Yokoi, M. , Shigihara, A., Honda, T.(Faculty of Horticulture, Chiba University, Matsudo, Chiba, Japan) **Acylated peonidin glycosides in the violet-blue cultivars of Pharbitis nil.** *Phytochemistry*, v. 31(2): p. 659-663, 1992 (5 ref, Eng).

Five peonidin glycosides were isolated from purple to violet flowers of *P.nil* and their structures determined by spectral methods. Three pigments were identified as the 6-trans-caffeate and 6,6"-trans-dicaffeate of peonidin 3-

sophoroside-5-glucoside and heavenly blue anthocyanin, respectively; the other two pigments were peonidin 3-sophoroside-5-glucoside and its 4'-glucosylcaffeate which have been reported previously. These five anthocyanins were variously present in 18 bluish flowered cultivars. Heavenly blue anthocyanin was the most stable of the five pigments, when measured in neutral solution.

9203-1858 Lu, X.Z., Xu, W.H., Naoki, H.(National Institutes of Pharmaceutical Research and Development, Shahe, Beijing 102 206, China) **Anthraquinones from Salvia przewalskii.** *Phytochemistry*, v. 31(2): p. 708-709, 1992 (6 ref, Eng).

One new anthraquinone, przewalskinone B ($C_{16}H_{12}O_5$, mp 206-07 degree C) and a known compound, ziganein, were isolated from the roots of *S.przewalskii* and their chemical structures elucidated by spectral analysis.

9203-1859 Lu, X.Z., Luo, H.W., Cai, H.(China Pharmaceutical University, Nanjing 210 009, China) **The structure of trijuganone C from Salvia trijuga.** *Acta Pharmaceutica Sinica*, v. 26(3): p. 193-196, 1991 (7 ref, Chi, Eng).

From *S.trijuga* 9 compounds were isolated and eight of them identified as ferruginol, sugiol, triacontanoic acid, tetratriacontanoic acid, octacosanoic acid, hexactecanoic acid, dl-homoserine and parahydroxybenzoic acid. Compound I, a red needle crystal $C_{20}H_{20}O_5$, mp 113 to 114 degree C is a new diterpenoid related to methyltanshinonate named trijuganone C. Its structure has been proved to be 15, 16-dihydromethyltanshinoate by spectroscopic and chemical means.

9203-1860 Luczak, S., Swiatek, L.(Department of Botany and Biology, Institute of Environmental Research and Bioanalysis, Medical Academy in Lodz, Muszynskiego 1,90-151 Lodz, Poland) **GC-MS investigation of phenolic acids in Ononis spinosa roots.** *Fitoterapia*, v. 62(5): p. 455-456, 1991 (15 ref, Eng).

Onosis spinosa roots yielded salicylic, cinnamic, p-hydroxybenzoic, p-hydroxyphenylacetic, vanillic, gentisic, protocatechuic, alpha-resorcylic, beta-resorcylic, homoprotocatechuic, syringic, p-hydroxyphenyllactic, p-hydroxyphenylpyruvic, p-coumaric, gallic, ferulic, caffeic and spinapic acids.

9203-1861 Ma, C.Y., Zhu, K.X., Yang, D.M. , Yang, J.S., Yu, D.Q. (National Institute for the Control of Pharmaceutical and Biological Products, Beijing 100 050, China) **Studies on chemical constituents of Veronica linariifolia Pall. ex Link. sub. dilatata (Nakai et Kitagawa) Hong.** *Acta Pharmaceutica Sinica*, v. 26(3): p. 203-208, 1991 (5 ref, Chi, Eng).

A new flavonoid glycoside, named linariifolioside, $C_{29}H_{32}O_{17}$ with mp 232 to 234 degree C was isolated from the alcohol extract of the dried herb of *V.linariifolia* subspecies *dilatata*. Based on spactral (IR, UV, 1H NMR, 13C NMR and FAB-MS) analysis and hydrolysis products its structure was elucidated as luteolin-7-O-6'''-O-acetyl-beta-D-glucosyl-(1 to 2)-beta-D-glucoside. Four known compounds, luteolin-7-O-beta-D-glucosyl-(1 to 2)-beta-D-gluycoside, apigenin-7-O-alpha-L-rhamnoside, luteolin and apigenin were isolated from the same fraction and identified.

9203-1862 Ma, Y., Han, G.Q., Li, C.L. , Cheng, J.R., Arison, B.H.* , Hwang, S.B.(School of Pharmaceutical Sciences, Beijing Medical University, Beijing 100 083, China) **Neolignans from Piper polysyphorum C.DC.** *Acta Pharmaceutica Sinica*, v. 26(5): p. 345-350, 1991 (8 ref, Chi, Eng).

One new neolignan named polysyphorin and three new enantiomeric forms of (+)-virolongin, (+)-grandisin and (+)-lancifolin D were isolated from *P.polysyphorum*. Two known neolignans, wallichinine and hancinone D were also obtained from the same sources. The structure determination was based upon spectroscopic analysis (UV,IR,CD,MS, 1HNMR, 13CNMR, COSY) and derivative preparation. The structure for polysyphorin was established as threo-delta7'-7-hydroxy-3,4,5, 3',5'-pentamethoxy-8-O-4-'neolignan. It is a racemic enantiomer. The platelet activating factor inhibitory activities were reported.

9203-1863 Madhavan, L., Gopalakrishnan, M. , Narayanan, C.S. (Regional Research Laboratory, CSIR, Trivandrum 695019, India) **Chemical composition of nutmeg leaf and flower oils.** *Indian Perfumer*, v. 35(3): p. 161-163, 1991 (8 ref, Eng).

Leaf oils (yield 4.0 percent) from male and female trees had typical nutmeg oil aroma while the flower oil (yield 1.66 percent) had a different fragrance. Leaf oils from female and male trees shows different amounts of consituents. Alpha-pinene present in leaf oil from female and male trees, and flowers was 14.6, 8.6 and 9.5 percent respectively, myristicin (female tree leaves 0.44, male tree leaves 1.36, flowers 3.8 percent, elemicin (female tree leaves 0.5, male tree leaves 3.5, flowers 8.76 percent). In Indian nutmeg and mace oils the hallucinogenic principle is myristicin in the leaf and flower oils the major hallucinogenic compound is elemicin.

9203-1864 Mahmood, K., Fontaine, C., Pais, M. , Ali, H.M., Hadi, H.A., Guittet, E.(Department of Chemistry, University of Malaya, 59100 Kuala Lumpur, Malayasia) **Cyathostemmine, a new shikimic acid derivative from Cyathostemma viridiflorum-Griff.** *Tetrahedron Letters*, v. 32(43): p. 6117-6120, 1991 (7 ref, Eng).

Cyathostemmine ($C_{31}H_{28}O_8$; mp 137-38 degree C) has been isolated from the bark of *C.viridiflorum* and its structure elucidated by 2D NMR analysis. IARI, New Delhi.

9203-1865 Maldonado, E., Cardenas, J. , Salazar, B., Toscano, R.A. , Ortega, A. , Jankowski, C.K., Aumelas, A., Van Calsteren, M.R. (Instituto de Quimica, Universidad Nacional Autonoma de Mexico, Circuito Exterior, Ciudad Universitaria, Coyoacan 04510 Mexico, DF) **Salvianduline C, a 5,6-secoclerodane diterpenoid from Salvia lavanduloides.** *Phytochemistry*, v. 31(1): p. 217-220, 1992 (7 ref, Eng).

The structure and configuration of salvianduline C, a novel 5,6-secoclerodane diterpenoid isolated from *S.lavanduloides* have been established by high resolution NMR spectroscopy and X-ray crystallographic analysis.

9203-1866 Marco, J.A., Sanz, J.F., Yuste, A. , Jakupovic, J. (Departamento de Qumica Organica, Facultad de Ciencias Quimicas, Universidad de Valencia, E-46100 Burjassot, Valencia, Spain) **Novel germacrolide-amino acid adduct dimer from Centaurea aspera.** *Tetrahedron Letters*, v. 32(38): p. 5193-5194, 1991 (5 ref, Eng).

The novel germacranolide-valine adduct dimer ($C_{48}H_{66}O_{14}N_2$), has been isolated from aerial parts of *C.aspera* var.*aspera*. Its structure has been determined by spectroscopic methods. IARI, New Delhi.

9203-1867 Marco, J.A., Sanz, J.F., Yuste, A., Carda, M., Jakupovic, J.(Departamento de Quimica Organica, Universidad de Valencia, E-46100 Burjassot, Valencia, Spain) **Sesquiterpene lactones from Artemisia barrelieri.** *Phytochemistry*, v. 30(11): p. 3661-3668, 1991 (35 ref, Eng).

Extraction of aerial parts of *A.barrelieri* and chromatographic separation yielded a new germacranolide, two new monocyclic sesquiterpenes and a novel germacranolide dimer, together with several known compounds.

9203-1868 Marlatt, C., Ho, C.T., Chien, M.(Givaudan Corporation, Clifton, New Jersey 07014, New Jersey, USA) **Studies of aroma constituents bound as glycosides in tomato.** *Journal of Agricultural and Food Chemistry*, v. 40(2): p. 249-252, 1992 (26 ref, Eng).

The glycosides were isolated from an aqueous extract of tomatoes by adsorption onto a column of Amberlite XAD-2, followed by washing of the column with hexane and subsequent elution using methanol; the volatiles were later released from the methanol extract by enzyme-mediated hydrolysis using either a beta-glucosidase or a pectinase. Major volatile compounds identified by GC/MS included 2-phenylethanol, benzyl alcohol, benzoic acid, and several shikimate-type products. Also found in small quantities were many monoterpene alcohols and C13 norisoprenoids. The role of glycosides as possible flavor precursors in tomato is discussed.

9203-1869 Masuda, H., Ohtani, K., Mizutani, K., Ogawa, S., Kasai, R.*, Tanaka, O.(Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi, Minami-ku, Hiroshima 734, Japan) **Chemical study on Haematoxylon campechianum: A sweet principle and new dibenz{b,d}oxocin derivatives.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1382-1384, 1991 (7 ref, Eng).

The sweet principle of an extract of heartwood of *H.campechianum* was identified as hematoxylin (1). In addition to 1, two new dibenz{b,d}oxocin derivatives (2 and 3) were obtained. The structure of 2, named hematoxylol A, was elucidated as 3,4,10,11-tetrahydroxy-7,8-dihydro-6H-dibenz{b,d}oxocin-7-one. The latter compound (3) was purified as a tetramethyl ether (3') named tetra-O-methylhematoxylol B and its structure was assigned as 7-hydroxy-3,4,10,11-tetramethoxy-7,8-dihydro-6H-dibenz{b,d}oxocin-7-methanol.

9203-1870 Mata, R., Rodriguez, V. , Pereda-Miranda, R., Bye, R., Linares, E.(Laboratorio de Fitoquimica, Departamento de Farmacia, Facultad de Quimica, Universidad Nacional Autonoma de Mexico, Coyoacan 04510, Mexico, DF, Mexico) **A dammarane from Stevia salicifolia.** *Phytochemistry*, v. 30(11): p. 3822-3823, 1991 (11 ref, Eng).

A new dammarane was isolated from the hexane extract of the roots of *S.salicifolia*. The new metabolite was characterized by spectroscopic and chemical methods as (20S)-dammar-13(17),24-diene-3beta-yl acetate.

9203-1871 Mathela, C.S.(Chemistry Department, Kumaun University, Nainital 263002, UP, India) **Flavour constituents of Himalayan aromatic grasses.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.27*, Oct 21-23, 1991 (Eng).

The aromatic grasses viz., *Cymbopogon distans, C.stracheyi, C.jwarancusa, C.martinii* and *Bothriochloa bladhi* form a large part of the natural ground cover in the

Himalayan region. The chemical and spectral examination of their essential oils revealed certain significant chemical variations as compared to earlier reports from materials of other geographical regions. The cis- and trans- forms of p-mentha-2, 8-dien-1-ol and p-mentha-1(7), 8-dien-2-ol constitute about 65 percent of the essential oil from *C.martinii*. The cis- and trans- forms of p-mentha-2-en-1-ol and p-menth-1-en-3-ol form 60 percent of the oil in *C.jwarancusa* and 67 percent of the oil in *C.distans* chemotype V, respectively. Piperitone is the main constituent of the essential oil from *C.stracheyi (48 percent) and C.distans* chemotype-III (60 percent). Acorenone, intermediol, neointermediol and monoterpene esters form major part of the essential oil from *B.bladhi*. (Abstr. No. C-04).

9203-1872 Mehra, S.N., Mehra, S.C., Dwivedi, B.N.(Camphor & Allied Products Ltd., Clutterbuckganj, Bareilly 243502, UP, India) **Studies in Indian pine oleoresin gums-turpentine oils from indigenous pines.** *International Symposium on Newer Trends in Essen.Oils & Flavs held at RRL, Jammu, J&K, India. p.17*, Oct 21-23, 1991 (Eng).

The chemical composition of turpentine oils derived by vacuum distillation of oleoresin gums from four Indian *Pinus* species viz., *P.roxburghii* (chirpine), *P.wallichiana* (bluepine), *P.kesiya* (khasipine), *P.gerardiana* (chilgozapine) has been studied using GLC. *P.roxburghii* is already being tapped commercially on large scale for the production of turpentine oil. Both *P.wallichiana* and *P.kesiya* turpentine show a great potential due to presence of large amount of alpha and beta pinenes present in them. (Abstr. No. SL-O7).

9203-1873 Mericli, F., Mericli, A.H. , Ulubelen, A.*, Ilarslan, R. (University of Istanbul, Faculty of Pharmacy, Beyazit, Istanbul, Turkey) **Nonalkaloidal constituents of Delphinium peregrinum.** *Fitoterapia*, v. 62(5): p. 460, 1991 (5 ref, Eng).

From 500 g aerial parts flavonoids quercetin (5 mg), rutin (10 mg), astragalin (4 mg) and kaempferol-3-rutinoside as well as cis-p-coumaric acid (15 mg), beta-sitosterol (25 mg), alpha-amyrin (7 mg) and alpha-amyrin acetate (12 mg) were isolated.

9203-1874 Mimaki, Y., Sashida, Y.*, Kawashima, K.(Tokyo College of Pharmacy, 1432-1, Horinouchi, Hachioji, Tokyo 192-03, Japan) **Steroidal saponins from the bulbs of Camassia cusickii.** *Phytochemistry*, v. 30(11): p. 3721-3727, 1991 (14 ref, Eng).

Six new steroidal saponins have been isolated from the fresh bulbs of *C.cusickii*. Their structures were determined by spectroscopic analysis and some chemical means. The saponins isolated were shown to contribute to the bitter taste of the bulbs.

9203-1875 Mimaki, Y., Ishibashi, N., Komatsu, M., Sashida, Y. (Tokyo College of Pharmacy, 1432-1, Horinouchi, Hachioji, Tokyo 192-03, Japan) **Studies on the chemical constituents of Gloriosa rothschildiana and Colchicum autumnale.** *Shoyakugaku Zasshi*, v. 45(3): p. 255-260, 1991 (13 ref, Eng).

Comparative studies on the chemical constituents of the tubers of *G.rothschildiana* and the corms of *G.autumnale* revealed that both of the plants contained a new phenolic glucoside, 2-beta-D-glucopyranosyloxybenzyl 2-beta-D-glucopyranosyloxy-6-methoxybenzoate, the first salicin derivative from Liliaceae plants, as well as caffeic acid 4-O-beta-D-glucopyranoside, colchicoside and colchicine. Colchiciline was detected only in *G.rothschildiana*, and N-deacetylcolchicine, demecolcine and N-methyldemecolcine in *C.autumnale*.

9203-1876 Mitsunaga, K., Koike, K., Ohmoto, T.*(School of Pharmaceutical Sciences, Toho University, 2-2-1 Miyama, Funabashi, Chiba 274, Japan) **Constituents of the bark of Evodia daniellii.** *Shoyakugaku Zasshi*, v. 45(3): p. 263-265, 1991 (6 ref, Eng).

From the bark of *E.daniellii*, limonin and four isoquinoline alkaloids were isolated, and the latter four alkaloids were identified as 6,7-dimethoxyhydrastine, gandharamine, isocorydine and palmatine p-hydroxybenzoate.

9203-1877 Mizuno, M., Yoshida, S., Iinuma, M. , Tanaka, T., Tsuji, K., Lang, F.A.*(Department of Pharmacognosy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5 chome, Gifu 502, Japan) **Four flavonol glycosides from Achlys triphylla.** *Phytochemistry*, v. 31(1): p. 301-303, 1992 (1 ref, Eng).

Four new flavonol glycosides were isolated from the underground parts of *A.triphylla* in addition to eight known compounds. By means of spectrosocpic analysis, the structures were characterized as isorhamnetin 3-glucosyl(1 to 2)galactoside, isorhamnetin 3-{6''-acetylglucosyl(1 to 3)galactoside}, isorhamnetin 3-{4",6"-di-acetylglucosyl(1 to 3)galactoside}, and syringetin 3-{6"-acetylglucosyl(1 to 3)galactoside}, respectively. In the aerial parts of the plant, seven knwon compounds were also confirmed.

9203-1878 Mizuno, M., Kojima, H., Iinuma, M. , Tanaka, T., Goto, K.(Department of Pharmacognsoy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5 chome, Gifu 502, Japan) **Coumarin derivatives in Coptis trifolia.** *Phytochemistry*, v. 31(2): p. 717-719, 1992 (8 ref, Eng).

Known compounds, epiberberine, groenlandicine, scopoletin and beta-sitosterol were characterized in the whole plants of *C.trifolia*. By means of spectral analysis, the structures of two new compounds were determined to be glycosides of a 10-hydroxygeranyl residue which is linked with scopoletin (7-hydroxy-6-methoxycoumarin) through an ether linkage.

9203-1879 Mizuno, M., Matsuura, N., Iinuma, M., Tanaka, T. (Department of Pharmacognosy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5 chome, Gifu 502, Japan) **Isoflavones from roots of Euchresta japonica.** *Phytochemistry*, v. 31(2): p. 675-678, 1992 (11 ref, Eng).

Seven new isoflavones, named euchrenones b10-b16 were isolated from the roots of *E.japonica* and their structures determined by means of spectral data.

9203-1880 Mizuno, M., Kanie, Y., Iinuma, M. , Tanaka, T., Lang, F.A.*(Department of Pharmacognosy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5 chome, Gifu 502, Japan) **Two flavonol glycosides from Vancouveria hexandra.** *Phytochemistry*, v. 31(1): p. 297-299, 1992 (11 ref, Eng).

In addition to two known glycosides, ikarisoside F and epimedin A, two new glycosides of a flavonol with a gamma, gamma-dimethylallyl group were isolated from the underground and the aerial parts of *V.hexandra*. The structures were determined to be des-O-methylanhydroicaritin 3,7-diglucoside and anhydroicaritin 3-glucosyl (1 to 3)rhamnoside-7-glucoside by means of spectral analysis.

9203-1881 Mizuno, M., Matsuura, N., Iinuma, M., Tanaka, T. (Department of Pharmacognosy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5 chome, Gifu 502, Japan) **Coumaronochromones in the roots of Euchresta japonica.** *Phytochemistry*, v. 31(2): p. 643-645, 1992 (12 ref, Eng).

In addition to eight known compounds euchrenones a6,a11 and a12, glabrol, euchretins A-C, and lespedezaflavanone C, three new coumaronochromones were isolated from the roots of *E.japonica*. The structures of new compounds were characterized as 5,7,4',5'-tetrahydroxy-6,8-di(gamma,gamma-dimethylallyl)-,5,4',5'-trihydroxy-6-gamma,gamma-dimethylallyl-{6",6"-dimethylpyrano(2",3":7,8)}-, and 5,7,5'-trihydroxy-8-gamma,gamma-dimethylallyl-{6''',6'''-dimethylpyrano(2'''3,3''':4',3')}-coumaronochromone, and were named euchretins F, G and H, respectively.

9203-1882 Monache, E.D., D'Albuquerque, I.L. , De Andrade Chiappeta, A., De Mello, J.F.(Centro Chimica dei Recettori del CNR, Istituto di Chimica, Universita Cattolica, Largo F. Vito 1, 00168-Roma, Italy) **A bianthraquinone and 4'-O-methyl-ent-gallocatechin from Cassia trachypus.** *Phytochemistry*, v. 31(1): p. 259-261, 1992 (14 ref, Eng).

A new bianthraquinone, 5,5'-bi-7-methylphyscion, and a new methylated ent-catechin have been isolated from the roots of *C.trachypus*. The structure of the bianthraquinone was elucidated by detailed NMR investigation while that of the catechin by comparison of molecular rotation and NMR data with those of known catechins.

9203-1883 Mookherjee, B.D., Trenkle, R.W. , Wilson, R. (International Flavors & Fragrances, Inc. Research and Development, 1515 Highway 36, Union Beach, NJ 07735, USA) **Live flowers: A new dimension in fragrance research.** *International Symposium on Newer Trends in Essen.Oil & Flav. held at RRL, Jammu, J&K, India*, Oct 21-23, 1991 (Eng).

Since time-immemorial flavors and fragrances have been created with the essential oils produced from picked flowers and fruits and related natural products. The aromas of the "Live" natural products have been analysed to be different from those of the corresponding 'picked' or processed materials. The chemistry of the aroma of the 'live' flowers and its influence on the human mind were discussed. (Abstr. No. PL-85).

9203-1884 Moriyama, M., Tahara, S., Ingham, J.L., Mizutani, J. (Department of Agricultural Chemistry, Faculty of Agriculture, Hokkaido University, Kita-ku, Sapporo 060, Japan) **Isoflavones from the root bark of Piscidia erythrina.** *Phytochemistry*, v. 31(2): p. 683-687, 1992 (21 ref, Eng).

Seven new isoflavones have been isolated from the root bark of *P.erythrina* and characterized. Four isoflavones viz., isopiscerythrone, allolicoisoflavone A, piscisoflavones A and B were found to exhibti strong antifungal activity against *Cladosporium herbarum*.

9203-1885 Mossa, J.S., Muhammad, I. , El-Feraly, F.S.*, Hufford, C.D., McPhail, D.R., McPhail, A.T.(Medicinal, Aromatic and Poisonous Plants Research Center, College of Pharmacy, King Saud University, Riyadhn 11451, Saudi Arabia) **Bisabolene and guaiane sesquiterpenes from Pulicaria glutinosa.** *Phytochemistry*, v. 31(2): p. 575-578, 1992 (11 ref, Eng).

Aerial parts of *P.glutinosa* yielded three bisabolene sesquiterpenes, puliglutol, puliglutal and puliglutone; structural assignments were based largely on their 2D NMR spectral data. A fourth sesquiterpene, the guaiane cycloepoxypuliglene, was also obtained, and its structure and relative stereochemistry were established by X-ray crystallographic analysis.

9203-1886 Mukherjee, K.S., Mehrotra, A. , Bhattacharjee, P., Laha, S., Chakraborty, C.K.(Department of Chemistry, Visva Bharati University, Santiniketan 731 235, WB, India) **A new diol from Randia longispina.** *Fitoterapia*, v. 62(6): p. 506-507, 1991 (4 ref, Eng).

A new aliphatic diol, randiol ($C_{34}H_{70}O_2$; mp 74-75 degree C), has been isolated from the bark of *R.longispina* and its structure established as tetratriaconta-12,21-diol.

9203-1887 Naf, R., Velluz, A.(Firmenich SA, Research Laboratories, POB 239, CH-1211, Genevoa 8, Switzerland) **Isolation of acyclic precursors of the marmelo oxides, the marmelo lactones and the quince oxepine from quince fruit (Cydonia oblonga Mil.).** *Tetrahedron Letters*, v. 32(35): p. 4487-4490, 1991 (13 ref, Eng).

(2E, 4E)-2,7-Dimethyloctadiene 1,8-diol, (2E. 4E, 7Z)-2,7-dimethyldecatriene-1,10-diol and (4E, 6E)-2,7-dimethyl-8-hydroxyoctadienoic acid; three acyclic precursors of the marmelo oxides, of the marmelo lactones and of quince oxepine respectively, as well as three acyclic C10 compounds (3E)-2,7-dimethyloctene-1,8-diol, (2E,4E)-2,7-dimethyl-8-hydroxyoctadienoic acid and (2E, 4E)-2,7-dimethyloctadienedioic acid have been isolated from the glycosidic fraction of *C.oblonga* fruit. IARI, New Delhi.

9203-1888 Nagao, T., Tanaka, R., Okabe, H.*(Faculty of Pharmaceutical Sciences, Fukuoka University, Nanakuma 8-19-1, Jonan-ku, Fukuoka 814-01, Japan) **Studies on the constituents of Aster scaber Thunb. I. Structures of scaberosides, oleanolic acid glycosides isolated from the root.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1699-1703, 1991 (8 ref, Eng).

Six oleanolic acid glucuronide saponins, scaberosides B1, B2, B3, B4, B5 and B6 were isolated from the root of *A.scaber* as their methyl esters, and their structures were determined based on spectral and chemical evidence. Scaberosides have a common prosapogenin structure, oleanolic acid 3-O-glucopyranosiduronic acid, and differ in the structures of the 28-O-linked sugar moieties. Scaberoside B1 is a 28-{alpha-L-arabinopyranosyl}ester, scaberoside B2, a 28-{beta-D-xylopyranosyl} ester, scaberoside B3, a 28-{O-alpha-L-rhamnopyranosyl-(1 to 2)-alpha-L-arabinopyranosyl} ester, scaberoside B4, a 28-{O-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-xylopyranosyl} ester, scaberoside B5, a 28-{O-beta-D-xylopyranosyl-(1 to 4)-O-alpha-L-rhamnopyranosyl-(1 to 2)-alpha-L-arabinopyranosyl} ester, and scaberoside B6, a 28-{O-beta-D-xylopyranosyl-(1 to 4)-O-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-xylopyranosyl} ester of the prosapogenin.

9203-1889 Nagao, T., Tanaka, R., Shimokawa, H., Okabe, H.*(Faculty of Pharmaceutical Sciences, Fukuoka University, Nanakuma 8-19-1, Jonan-ku, Fukuoka 814-01, Japan) **Studies on the constituents of Aster scaber Thunb. II. Structures of echinocystic acid glycosides isolated from the root.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1719-1725, 1991 (7 ref, Eng).

Four new echinocystic acid 3,28-O-bisdesmosides, scaberosides A1, A2, A3, and A4, were isolated together with aster saponin Ha, aster saponin Hb and foetidissimoside A from the polar glycoside fraction of the root of *A.scaber* as their methyl esters, and their structures were determined based on spectral and chemical evidence. Scaberoside A1 is a 28-{O-beta-D-apiofuranosyl-(1 to 3)-O-alpha-L-rhamnopyranosyl-(1 to 2)-alpha-L-arabinopyranosyl} ester, A2, a 28-{O-beta-D-xylopyranosyl-(1 to 4)-O-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-xylopyranosyl} ester, A3, a 28-{O-beta-D-apiofuranosyl-(1 to 3)-{O-beta-D-xylopyranosyl-(1 to 4)-O-alpha-L-rhamnopyranosyl-(1 to 2)-alpha-L-arabinopyranosyl} ester, and A4, a 28-{O-beta-D-xylopyranosyl-(1 to 3)-{O-beta-D-xylopyranosyl-(1 to 3)-O-beta-D-xylopyranosyl-(1 to 4)-O-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-xylopyranosyl} ester of the prosapogenin.

9203-1890 Nair, A.G.R., Sivakumar, R.(Department of Chemistry, Pondicherry University, Pondicherry 605 014, India) **Non-identity of hortensin from Millingtonia hortensis with 3,4'-dihydroxy-6,7-dimethoxyflavone.** *Phytochemistry*, v. 31(2): p. 671-673, 1992 (17 ref, Eng).

Hortensin, isolated from the leaves and flowers of *M.hortensis* and analysed as 3,4'-dihydroxy-6, 7-dimethoxyflavone, has been found to be different from a synthetic sample. Reinterpretation of the reported data and comparisons with authentic samples show that hortensin is 5,4'-dihydroxy-6, 7-dimethoxyflavone(cirsimaritin).

9203-1891 Naito, T., Katsuhara, T., Niitsu, K., Ikeya, Y., Okada, M., Mitsuhashi, H.(Research institute for Biology & Chemistry, Tsumura & Co., 3586 Yoshiwara, Amimachi, Inashiki-gun, Ibaraki 300-11, Japan) **Two phthalides from Ligusticum chuangxiong.** *Phytochemistry*, v. 31(2): p. 639-642, 1992 (Eng).

Two novel phthalides, (E)-senkyunolide E and senkyunolide N, along with the 18 phthalides including senkyunolide H and senkyunolide J, were isolated from the rhizomes of *L.chuangxiong*. On the basis of spectral analyses and chemical methods the structures of (E)-senkyunolide E and senkyunolide N were proved to be

(E)-(9RS)-3-butylidene-9-hydroxyphthalide and (3S,6S,7S)-3-butyl-4,5-dihydro-6,7-dihydroxyphthalide, respectively. The absolute configuration of senkyunolide J was also established by spectral analyses and chemical methods; the conformational structure of senkyunolide H was studied by X-ray diffraction analysis.

9203-1892 Nasution, M.P., Hussain, R.A. , Kinghorn, A., Tosun, A., Tosun, F. , Tanker, M., Ozden, T.(Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, IL 60612, USA) **10 alpha-Hydroxy-methylsparteine, a new type of quinolizidine alkaloid from Genista sessilifolia.** *Tetrahedron Letters*, v. 32(42): p. 5915-5918, 1991 (11 ref, Eng).

10-alpha-Hydroxy methylsparteine ($C_{16}H_{28}N_{2}O$), a novel type of quinolizidine alkaloid with a 16-carbon atom skeleton, was isolated from the aerial parts of *G.sessilifolia.* The position of the hydroxymethyl substituent and the stereochemistry were established by anaylsis of its spectroscopic data. IARI, New Delhi.

9203-1893 Nishikawa, M., Fujii, K.(Hospital Pharmacy, Hamamatsu University School of Medicine, 3600, Handa-cho, Hamamatsu-shi, Shizuoka 431-31, Japan) **Effect of autoxidation of hydrogenated castor oil containing 60 oxyethylene groups on degradation of miconazole.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2408-2411, 1991 (10 ref, Eng).

When 30 mg/ml aqueous hydrogenated castor oil consisting of 60 oxyethylene group (HCO-60) solutions were shaken under fluorescent light of about 500 lux in a water bath at 30 degree C or 60 degree C, hydroperoxide, formaldehyde, and formic acid were formed. An aqueous solution containing 10 mg/ml miconazole (MCZ), 100 mg/ml HCO-60, and 1 mg/ml lactic acid was sealed in ampoules and stored at various temperatures for 8d. At 40 degree C or above, the concentration of MCZ decreased accompanied by a decrease in pH and formaldehyde formation. However, in the presence of nitrogen, no degradation was observed. The degradation of MCZ was also observed in the presence of iron(II) ion and hydrogen peroxide. Degradation of MCZ and HCO-60 was prevented by the addition of hydroxy radical scavengers, especially potassium iodide and thiourea. These results indicate that hydroxy radicals generated by autoxidation of HCO-60 degraded MCZ.

9203-1894 Niwa, M., Sugino, H., Takashima, S. , Sakai, T., Wu, Y.C., Wu, T.S. , Kuoh, C.S.(Faculty of Pharmacy, Meijo University, Tempaku, Nagoya 468, Japan) **A new coumarin glucoside from Daphne arisanensis.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2422-2424, 1991 (7 ref, Eng).

A new coumarin glucoside named daphneside ($C_{21}H_{26}O_{14}$, mp 237 degrees) was isolated along with two known coumarin glucosides, daphnin and daphnetin-8-glucoside, and two known phenylpropanoid glucosides, syringin and syringinoside, from a water-soluble fraction of *D.arisanensis* collected in Taiwan. The structure of daphneside was elucidated by spectroscopic and chemical methods.

9203-1895 Nozaki, H., Matsuura, Y., Hirono, S., Kasai, R., Tada, T., Nakayama, M. , Lee, K.H.*(Department of Biological Chemistry, Faculty of Science, Okayama University of Science, Okayama 700, Japan) **Maytensifolin-C, a friedelane alcohol from Maytenus diversifolia.** *Phytochemistry*, v. 30(11): p. 3819-3821, 1991 (5 ref, Eng).

A new friedelane triterpene alcohol, maytensifolin-C, has been isolated from the stems of *M.diversifolia.* Its structure was established as 6beta-hydroxy-friedelan-3,16,21-trione by spectroscopic methods and single-crystal X-ray analysis.

9203-1896 Ohtani, K., Yang, C.R., Miyajima, C., Zhou, J., Tanaka, O.(Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Kasumi, Minami-ku, Hiroshima 734, Japan) **Labdane-type diterpene glycosides from fruits of Rubus foliolosus.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2443-2445, 1991 (13 ref, Eng).

From fruits of *R.foliolosus*, a traditional medicine used in Yunnan, China, seven labdane-type diterpene glycosides were isolated. Of these, five were identified as goshonosides-F1-5 which have been isolated from leaves of *R.chingii.* Structures of two new glycosides, goshonosides-F6 and -F7, were elucidated as alpha-L-arabinofuranosyl-(1 to 6)-beta-D-glucopyranoside of 13(E)-ent-labda-8(17),13-diene-3beta,15,18-triol and 3beta,15-di-O-beta-D-glucopyranoside of 13(E)-ent-labda-8(17),13-diene-3beta,15-diol. Goshonosides-F6 and -F7 were also isolated from the leaves of *R.chingii.*

9203-1897 Oksuz, S., Topcu, G.(University of Istanbul, Faculty of Pharmacy, 34452, Beyazit-Istanbul, Turkey) **A eudesmanolide and other constituents from Inula graveolens.** *Phytochemistry*, v. 31(1): p. 195-197, 1992 (14 ref, Eng).

The aerial parts of *I.graveolens* afforded a new eudesmanolide, 3alpha-hydroxy-eudesm-4-en-12,6beta-olide in addition to known compounds, the guaianolide, 4alpha,5alpha-epoxyinuviscolide; the xanthanolides, tomentosin and 4H-tomentosin; the carabrones, carabrone and 4H-carabrone; the sesquiterpene acids, costic acid, 2alpha-hydroxycostic acid, 3alpha-hydroxycostic acid, 1beta-hydroxycostic acid, isocostic acid and ilicic acid; the flavonone, sakuranetin; the dihydroflavonols, aromadendrin, 7-O-methylaromadendrin, 3-O-acetyl-7-O-methylaromadendrin, 3-O-acetyltaxifolin, padmatin, 3-O-acetylpadmatin, 3-epi-padmatin and 3-epi-acetyl-7-O-methylaromadendrin; the flavones, scutellarein-6-methylether, kaempferol, kaempferol-3-methyl ether, 6-hydroxykaempferol-3,6-dimethylether and the aromatics, p-hydroxybenzoic acid and 2-(p-hydroxyphenyl)ethylstearate.

9203-1898 Oleszek, W., Jurzysta, M. , Ploszynski, M., Colquhoun, I.J., Price, K.R., Fenwick, G.R.(Institute of Soil Science and Plant Cultivation, Osada Palacowa, 24-100 Pulawy, Poland) **Zahnic acid tridesmoside and other dominant saponins from alfalfa (Medicago sativa L.) aerial parts.** *Journal of Agricultural and Food Chemistry*, v. 40(2): p. 191-196, 1992 (37 ref, Eng).

A zahnic acid tridesmoside, 3-O{beta-D-glucopyranosyl(1-2)-beta-D-glucopyranosyl(1-2)-beta-D -gluco pyranosyl}-2beta,3beta,16alpha-trihydroxyolean-12-ene-23,28-dioic acid-23-O-alpha-L-arabinopyranosyl-28-O-{beta-D-apiofuranosyl-(1-3)-be ta-D-xylopyranosyl(1-4)-alpha-L-rhamnopyranosyl(1-2)-alpha -L-arabinosi de}, has been identified as the main saponin present in the aerial parts of alfalfa. Moreover, four medicagenic acid glycosides and soyasaponin I have been isolated from the same source and identified. Three of the medicagenic acid glycosides are identical to those previously found in alfalfa roots, while the fourth has been identified as 2-beta-hydroxy-3-beta-O-glucuronopyranosyl 28-O{alpha-L-rhamnopyranosyl(1-2)-alpha-L-arabinopy ranoside}olean-12-e n-23-oic acid. Biological activity was measured using the fungus Trichoderma viride, and hemolytic activity was assessed using a hemolytic test. The zahnic acid glycoside did not inhibit fungal growth over a wide range of concentrations and exhibited only weak hemolytic activity.

9203-1899 Otsuka, H., Yoshimura, K., Yamasaki, K., Cantoria, M.C. (Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, 1-2-3 Kasumi-ku, Hiroshima 734, Japan) **Isolation of 10-O-acyl iridoid glucosides from a Philippine medicinal plant, Oldenlandia corymbosa L.(Rubiaceae).** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2049-2052, 1991 (15 ref, Eng).

From the aerial parts of *O.corymbosa*, nine iridoid glucoside derivatives were isolated. On spectroscopic investigation, five known compounds were identified, that is, deacetyl asperuloside, asperuloside, asperulosidic acid, deacetyl asperulosidic acid and scandoside methyl ester. The structures of four new compounds were determined to be acylated derivatives of the known compounds, that is, 10-O-benzoyl deacetyl asperulosidic acid methyl ester, and 10-O-benzoyl, 10-O-p-hydroxybenzoyl, and 10-O-p-trans, cis-coumaroyl scandoside methyl esters.

9203-1900 Pang, X.P., Chen, Y.W., Li, X.J. , Long, J.G.(Department of Pharmacy, Tongji Medical University, Wuhan 430 030, China) **A new alkaloid of Menispermum dauricum DC. -dauriciline.** *Acta Pharmaceutica Sinica*, v. 26(5): p. 387-390, 1991 (8 ref, Chi, Eng).

A new phenolic dauricine-type alkaloid, named "dauriciline", was isolated from the rhizome of *M.dauricum*. Based on spectrometric analysis (UV,FAB-MS and 1H-NMR) and chemical reaction the structure of the new alkaloid was elucidated as RR,7,7'-demethyldauricine.

9203-1901 Parihar, R., Kharkwal, H.B.* , Mathela, C.S.(Chemistry Department, Govt. PG College, Pithoragarh, UP, India) **Essential oil from Artemisia elegantissima.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.26*, Oct 21-23, 1991 (Eng).

A.elegantissima, a tall aromatic shrub, is localised at higher elevations and possesses isothujone as single major compound in its essential oil (68 percent). Other constituents are sabinene, 1:8-cineol, p-cymene, thujone, trans-sabinene hydrate, sabinone, caryophyllene, terpinen-4-ol, lavandulyl acetate, trans- sabinyl acetate, thujyl acetate, germacrene-D, trans- a-bergamotene, caryophyllene epoxide, eugenol and a-cadinol. Forty compounds identified constitute 94 percent of the oil. (Abstr. No. C-03).

9203-1902 Patt, J.M., Hartman, T.G. , Creekmore, R.W., Elliott, J.J., Schal, C. , Lech, J., Rosen, R.T.(Department of Biological Science, Nelson Biological Laboratories, Rutgers University, Piscataway, NJ 08855-1059, USA) **Floral odour of Peltandra virginica contains novel trimethyl-2,5-dioxabicyclo {3.2.1} nonanes.** *Phytochemistry*, v. 31(2): p. 487-491, 1992 (17 ref, Eng).

The qualitative and quantitative composition of the floral odour of *P.virginica* was determined by trapping odour components from freshly cut inflorescences on Tenax and Carbotrap adsorbents using a purge and trap apparatus. Analysis showed that a single novel compound, 1,3,6-trimethyl-2,5-dioxabicyclo{3.2.1}nonane, comprised nearly 70 percent of the odour. Four isomers of this compound were found in much smaller amounts (1.0-7.6 percent) while an analogue with mr 142 comprised 13 percent of the odour. Small amounts (ca 0.3-2.5 percent) of two isomers of methylundecene and three isomers of dimethyldodecenone were also detected. This is the first case of trimethyldioxabicyclo{3.2.1}nonanes reported in floral odours.

9203-1903 Peppard, T.L.(Givaudan Corporation, 125 Delawanna Avenue, Clifton, New Jersey 07015, USA) **Volatile flavor constituents of Monstera deliciosa.** *Journal of Agriculture and Food Chemistry*, v. 40(2): p. 257-262, 1992 (9 ref, Eng).

The volatile flavor components of *Monstera deliciosa* have been isolated using two different procedures. There was evidence of thermally induced artifacts in the extract obtained using a Likens-Nickerson device and using a direct, cold homogenization/extraction technique employing solid carbon dioxide and dichloromethane. The latter was followed by fractionation of the extract using adsorption chromatography on silica gel, employing solvent mixtures of gradually increasing polarity. Approximately 400 components were detected in these fractions by a combination of GC-MS and GC with simultaneous detection by FID, sulfur-specific FPD, and nitrogen-specific NPD. Components most responsible for the characteristic flavor of *M.deliciosa* were found, using GC with odor port evaluation, to be a variety of esters and lactones.

9203-1904 Pettit, G.R., Doubek, D.L., Herald, D.L., Numata, A., Takahasi, C., Fujiki, R., Miyamoto, T.(Cancer Research Institute and Department of Chemistry, Arizona State University, Tempe, Arizona 85287, USA) **Isolation and structure of cytostatic steroidal saponins from the African medicinal plant Balanites aegyptica.** *Journal of Natural Products*, v. 54(6): p. 1491-1502 , 1991 (22 ref, Eng).

Bioactivity-guided separation of a dichloromethane/methanol extract of *B.aegyptica* afforded four new cytostatic saponins, named balanitins 4-7. On the basis of enzymatic hydrolyses and glycosidation NMR chemical shifts employing the peracetates three saponins have been identified as yamogenin glycosides and fourth is a diosgenin glycoside.

9203-1905 Raffauf, R.F., Shemluck, M.J., Le Quesne, P.W.(College of Pharmacy and Allied Professions and Department of Chemistry, Northeastern University, Boston, Massachusetts 02115-5096, USA) **Withanolides of Iochroma fuchsioides.** *Journal of Natural Products*, v. 54(6): P. 1601-1606 , 1991 (16 ref, Eng).

In addition to the known withanolide D, three new withanolides have been isolated from leaf and stems of *I.fuchsioides* and characterized as 18-acetoxywithanolide D, 18-acetoxy-4-deoxy-5, 6-deoxy-5-withenolide D, and 18-acetoxy-5, 6-deoxy-5-withenolide D. 3-Methoxy-2, 3-dihydrowithanolide D and 18-acetoxy-3-methoxy-2, 3-dihydrowithanolide D have been identified as artefacts. Alkaloids were not detected; eight common amino acids and NH4+ were identified.

9203-1906 Ramachandraiah, O.S., Azeemoddin, G. , Rao, S.D.T., Padmakumari Amma, P. , Narayanan, C.S.(Oil Technological Research Institute, Anantapur 515001, AP, India) **Composition of essential oil from flower buds of Nagakesar.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.40*, Oct 21-23, 1991 (Eng).

Mammae longifolia is well distributed in Western India. Flowerbuds of Nagakesar on hydro/steam distillation, yielded 0.8 percent of essential oil. Extraction of oleoresin with n-hexane followed by steam distillation yielded 1.2 percent of the essential oil. Chemical constituents of the oil were identified as sesquiterpene hydrocarbons (30.56 percent), guaiene (12.73 percent), delta-linalool (7.3 percent), elemol (6.28 percent), a-copaene (3.36 percent), beta-caryophyllene (1.39 percent), a-pinene (0.92 percent), camphene (0.41 percent), beta-pinene (0.29 percent), delta-limonene (0.61 percent) and p-cymene (0.34 percent). The light yellow colour and pleasent spicy and sweet aroma make the oil a potential source of high grade perfumery. (Abstr. C-17).

9203-1907 Ramachandraiah, P., Adinarayana, D. , Syamasundar, K.V. (Department of Chemistry, S V Arts College, Tirupati 517 502, AP, India) **Chemical investigation of some Indian medicinal plants.** *Fitoterapia*, v. 62(6): p. 544-545, 1991 (23 ref, Eng).

Isolation of beta-sitosteryl-glycoside (0.3 percent) from *Cochlospermum gossypium* flowers, ursolic acid (0.1 percent) from *Bignonia megapatomica* leaves and, apigenin (0.02 percent) and luteolin (0.01 percent) from *Dalbergia paniculata* pods has been reported.

9203-1908 Rao, H.S.P., Reddy, K.S.(Department of Chemistry, Academic Complex, Pondicherry University, Pondicherry 605014, India) **Isoflavones from Flemingia vestita.** *Fitoterapia*, v. 62(5): p.458, 1991 (3 ref, Eng).

Isoflavones: genistein (0.25 percent), formononetin (0.035), pseudobaptigenin (0.015) and daidzein (0.01), were isolated from fresh peels of *F.vestita.*

9203-1909 Rao, K.S., Mishra, S.H.(Pharmacy Department, Faculty of Technology and Engineering, MS University of Baroda, Vadodara 390001, Gujarat, India) **Chemical constitution of drumstick polysaccharide.** *Indian Journal of*

Pharmaceutical Sciences, v. 54(1): p. 28-30, 1992 (15 ref, Eng).

Spectrophotometric studies of the mucilage designated as drumstick polysaccharide, isolated from *Moringa pterygosperma* pods, showed presence of galactose, dextrose, xylose and sodium, potassium, magnesium, calcium salts of glucuronic acid.

9203-1910 Rasoanaivo, P., Kaneda, N. , Kinghorn, A.D.*, Farnsworth, N.R.(Collaborative Research in Pharmaceutical Sciences and Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Illinois at Chicago, Chicago, Illinois 60612, USA) **Folotsoside A, a new pregnane glycoside from Folotsia sarcostemmoides.** *Journal of Natural Products*, v. 54(6): p. 1672-1676 , 1991 (20 ref, Eng).

From the aerial parts of *F.sarcostemmoids*, a new pregnane ester triglycoside designated as folotsoside A was isolated, accompanied by paeonol. The structure of folotsoside A was established as 12-O-benzoyl-lineolon 6-desoxy-3-O-methyl-beta-D-allopyranosyl-(1 to 4)-beta-D-cymaropyranosyl-(1 to 4)-beta-D-cymaroside on the basis of chemical and spectroscopic evidence.

9203-1911 Riaz, M., Chaudhary, F.M.(Applied Chemistry Research Centre, PCSIR Laboratories Complex, Lahore 54600, Pakistan) **The chemistry of indigenous medicinal plants of the genus** *Ageratum* (family Compositae). *Hamdard Medicus*, v. 34(4): p. 46-52, 1991 (33 ref, Eng).

Botanical characters of *Ageratum* spp., chemical constituents including flavonoids, sterols, amino acids, fatty acids and essential oils and their biological activities have been reported.

9203-1912 Rockenbach, J., Nahrstedt, A., Wray, V.(Institut fur Pharmazeutische Biologie und Phytochemie der Westfalischen Wilhelms-Universitat, D-4400 Munster, Germany) **Cyanogenic glycosides from Psydrax and Oxyanthus species.** *Phytochemistry*, v. 31(2): p. 567-570, 1991 (22 ref, Eng).

The cyanogenic glycosides from different parts of *P.livida*, *O.pyriformis* subsp.*pyriformis* and *O.speciosus*-subsp.*gerrardii* have been isolated and identified by means of their NMR data and chemical degradation. *P.livida* contains prunasin (leaves), the new oxyanthin (2R-beta-D-apio-D-furanosyl-(1 to 6)-beta-D-glucopyranosyloxy-phenylacetonitrile (leaves, stems, fruits) and the 5"-benzoate of oxyanthin (leaves, stems). *O.pyriformis* subsp *pyriformis* contains prunasin, oxyanthin (leaves, stems, flowers, fruits) and amygdalin (flowers). *O.speciosus* subsp.*gerrardii* has holocalin (leaves,stems and flowers).

9203-1913 Rodrigues, D.C., Yoshida, M. , Gottlieb, O.R.(Instituto de Quimica, Universidade de Sao Paulo, 05508 Sao Paulo, SP, Brazil) **Neolignans from Aniba ferrea.** *Phytochemistry*, v. 31(1): p. 271-273, 1992 (8 ref, Eng).

The presence of benzyl benzoates as well as of bicyclo{3.2.1}octanoid and hydrobenzofuranoid neolignans in *A.ferrea* was confirmed by the isolation of additional representatives of this class of natural products. The hydrobenzofuranoids included three novel ferrearins which considered together with four known ferrearins, led to the stereochemical clarification of the group.

9203-1914 Rozkrutowa, B.(Department of Phytochemistry, Institute of Pharmacology, Polish Academy of Sciences, Cracow, Poland) **Constituents of Browallia grandiflora.** *Fitoterapia*, v. 62(5): p. 459, 1991 (1 ref, Eng).beta-Amyrin, friedelin, beta-sitosterol-beta-D-glucoside, rutin and scopoletin, were isolated from *B.grandiflora* plants.

9203-1915 Rumbero, A., Vazquez, P.(Departamento de Qumica Universidad Autonoma de Madrid. Canto Blanco, 28049-Madrid, Spain) **Structure and stereochemistry of magniflorine, a new indole alkaloid from Hamelia magniflora Wernha.** *Tetrahedron Letters*, v. 32(38): p. 5153-5154, 1991 (14 ref, Eng).

A new type of indole alkaloid, magniflorine ($C_{20}H_{22}N_2O_3$; mp 168-70 degree C), has been isolated from the fruits of *H.magniflora*. Its structure and stereochemistry has been established from NMR data. IARI, New Delhi.

9203-1916 Rustaiyan, A., Mosslemin-Kupaii, M.H. , Zdero, C. (Department of Chemistry, Shahid Beheshty University, Eveen, Tehran, Iran) **Furolabdanes and related compounds from Ballota aucheri.** *Phytochemistry*, v. 31(1): p. 344-346, 1992 (7 ref, Eng).

The aerial parts of *B.aucheri* afforded ballotinone, five new labdanes and balloaucherolide, a seco-labdane. The structures were elucidated by high field NMR techniques.

9203-1917 Saad, J.M., Soepadamo, E., Fang, X.P., McLaughlin, J.L.* , Fanwick, P.E.(Department of Medicinal Chemistry and Pharmacognosy, School of Pharmacy and Pharmacal Sciences, Purdue University, West Lafayette, Indiana 47907, USA) **(-)-Grandisin from Cryptocarya crassinervia.** *Journal of Natural Products*, v. 54(6): p. 1681-1683 , 1991 (5 ref, Eng).

The known lignan (-)-grandisin has been isolated from the bark of *C.crassinervia* by using the brine shrimp lethality test to direct the isolation; its structure and relative stereochemistry have been determined by ir, 1H nmr, ms, and X-ray crystallography as an all trans alpha,alpha'-diaryl-beta, beta-dimethyltetrahydrofuran. Grandisin did not exhibit significant cytotoxicity in a panel of human tumor cells.

9203-1918 Saha, M.M., Mallik, U.K., Mallik, A.K.*(Department of Chemistry, Jadavpur University, Calcutta 700 032, WB, India) **A chromenoflavanone and two caffeic esters from Pongamia glabra.** *Phytochemistry*, v. 30(11): p. 3834-3836, 1991 (17 ref, Eng).

(-)-Isoglabrachromene, a new natural chromenoflavanone, and hexacosanyl caffeate and triacontanyl caffeate, two new esters, have been isolated together with 11 known flavonoids and betulinic acid from the stem bark of *P.glabra.* The reason why the H-alpha and H-beta of 2'-hydroxy-6'-methoxychalcones appear at the same field in their 1H NMR spectra is discussed.

9203-1919 San Feliciano, A., Del Corral, J.M. , Gordaliza, M., Castro, M.A.(Department of Organic Chemistry, Faculty of Pharmacy, University of Salamanca, 37007 Salamanca, Spain) **Coumarins and related compounds from Juniperus sabina.** *Fitoterapia*, v. 62(5): p. 435-439, 1991 (9 ref, Eng).

New propiophenones and a cinnamic acid derivative as well as some known coumarins have been isolated from the n-hexane extract of *J.sabina* leaves. The demethylation of 4-methoxy-coumarins was also studied.

9203-1920 Sanz, J.F., Ferrando, C., Marco, J.A.(Departamento de Quimica Organica, Facultad de Ciencias Quimicas, Universidad de Valencia, E-46100 Burjassot, Valencia, Spain) **Oxygenated nerolidol esters and eudesmane acids from Inula viscosa.** *Phytochemistry*, v. 30(11): p. 3653-3655, 1991 (22 ref, Eng).

The aerial parts of *I.viscosa* yielded three new esters of 9-hydroxynerolidol and two new eudesmane acids, along with several known compounds.

9203-1921 Shieh, W.L., Lin, C.N.(Natural Products Research Center, Kaohsiung Medical College, Kaohsiung, Taiwan 80731, R.O.C) **A quinonoid pyranobenzoxanthone and pyranodihydrobenzoxanthone from Artocarpus communis.** *Phytochemistry*, v. 31(1): p. 364-367, 1992 (9 ref, Eng).

From the root bark of *A.communis*, two known compounds, beta-sitosterol and cudraflavone A, a new triterpenoid ester, lupeol acetate, a new pyranodihydrobenzoxanthone, named artomunoxanthone, and a novel quinonoid pyranobenzoxanthone, named artomunoxanthentrione were further isolated and characterized.

9203-1922 Shimizu, N., Tomoda, M.*, Satoh, M. , Gonda, R., Ohara, N.(Kyoritsue College of Pharmacy, Shibakoen Minato-ku, Tokyo 105, Japan) **Characterization of a polysaccharide having activity on the reticuloendothelial system from the stolon of Glycyrrhiza glabra var. glandulifera.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2082-2086, 1991 (31 ref, Eng).

An acidic polysaccharide, named glycyrrhizan GA, was isolated from the stolon of *G.glabra*var.*glandulifera.* It produced a single band on electrophoresis and a single peak on gel chromatography, and its molecular mass was estimated to be 85000. Glycyrrhizan GA is composed of L-arabinose: D-galactose: L-rhamnose: D-galacturonic acid: D-glucuronic acid in the molar ratio of 22:10:1:2:1, in addition to small amounts of O-acetyl groups. Part of the hexuronic acid residues exist as methyl esters. Methylation analysis, carbon-13 nuclear magnetic resonance and periodate oxidation studies indicated that its structural features include mainly alpha-arabino-beta-3,6-galactan type structural units. Glycyrrhizan GA showed remarkable reticuloendothelial system-potentiating activity in a carbon clearance test.

9203-1923 Shingu, K., Marubayashi, N., Ueda, I., Yahara, S., Nohara, T.*(Faculty of Pharmaceutical Sciences, Kumamoto University, Oe-honmachi 5-1, Kumamoto 862, Japan) **Physagulin C, a new withanolide from Physalis angulata L.** *Chemical & Pharmaceutical Bulletin* , v. 39(6): p. 1591-1593, 1991 (5 ref, Eng).

A new withanolide, physagulin C was isolated from the methanolic extract of the fresh leaves stems of *P.angulata* and the structure was determined to be (20S,22R)-15-alpha-acetoxy-5beta(6), 16beta(17)-diepoxy-4beta, 14beta-dihydroxy-1-oxo-witha-2, 24-trienolide by spectroscopic means and X-ray analysis.

9203-1924 Singh, R.S., Misra, T.N., Pandey, H.S., Singh, B.P. (Natural Products Research Laboratory, Department of Chemistry, University of Gorakhpur, Gorakhpur 273009, UP, India) **Aliphatic hydroxyketones from Adhatoda vasica.** *Phytochemistry*, v. 30(11): p. 3799-3801, 1991 (12 ref, Eng).

Two new aliphatic hydroxyketones, isolated from the aerial parts of *A.vasica* have been characterized as 37-hydroxyhexatetracont-1-en-15-one and 37-hydroxyhentetracontan-19-one, respectively, on the basis of spectral data and chemical studies.

9203-1925 Singla, A.K., Pathak, K.(Department of Pharmaceutical Sciences, Panjab University, Chandigarh 160014, India) **Constituents of Euphorbia prostrata.** *Fitoterapia*, v. 62(5): p. 453-454, 1991 (2 ref, Eng).

Stigmasterol, beta-sitosterol (0.0354 percent), cycloart-23-ene-3beta-25-diol (0.015), fatty acid methyl esters, amino acids viz., alanine, isoleucine, 2-amino-n-butyric acid, ornithine hydrochloride and threonine were isolated from *E.prostrata*.

9203-1926 Sotelo, A., Alvarez, R.G.(Department of Pharmacy, Postgraduate Division, Facultad de Quimica, Universidad Nacional Autonoma de Mexico(UNAM), Ciudad Universitaria, Mexico DF 04510, Mexico) **Chemical composition of wild Theobroma species and their comparison to the cacao bean.** *Journal of Agricultural and Food Chemistry*, v. 39(11): p. 1940-1943, 1991 (11 ref, Eng).

Theobromine, caffeine, and theophylline content were determined in different parts of the plant in two varieties of *Theobroma cacao* and two wild *Theobroma* species, *T.angustifolium* and *T.bicolor*. Proximate analysis was performed for the bean, pulp, and shell of the four samples, and trypsin inhibitors and hemagglutinins were also investigated in beans and leaves. Fat was the main component in the seeds of all of the samples. The higher levels of alkaloids were found in the seeds of both varieties of *T.cacao*, theobromine being then main alkaloid found: 1.39 and 2.03 g/100 g in seeds of criollo and Costarrica varieties, respectively. In the *T.bicolor* the highest concentration of theobromine was in the hull, 915 mg, followed flowers,725 mg, and leaves,619 mg/100g of sample. In *T.angustifolium*, the highest concentration of theobromine was in the flowers (510 mg/ 100 g of sample). Caffeine was the second more important alkaloid in the cacao beans (180-920 mg/100 g of sample).

9203-1927 Sreelaxmi, U., Rao, J.T.*(Department of Chemistry, Dr H S Gour University, Sagar (MP) 470003, India) **Studies on the essential oil of Melissa parviflora.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India*, Oct 21-23, 1991 (Eng).

Aerial parts of *M.parviflora* yielded 2 percent of essential oil on water and steam distillation. The oil has been found to contain d-camphene(2.5 percent), dl-a-pinene(2.3 percent), 1-beta-pinene (2.13 percent), delta-3-carene (2.05 percent), d-limonene (12.95 percent), azulene (1.26 percent), linalool (13.36 percent), 1:8-cineole (9.33 percent), citronellal (4.0 percent), citronellol (8.2 percent), citral (13.0 percent), geraniol (21.1 percent), nepatolactone (1.91 percent), thymol (4.0 percent) and citronellic acid (2.0 percent). The oil posseses good antibacterial and antifungal activities. The results suggest that the oil of *M.parviflora* can be successfully employed in medicine, perfumery and flavour industries. (Abstr. No. C-10).

9203-1928 Subbaraju, G.V., Kumar, K.K.K. , Lakshmana Raju, B., Pillai, K.R., Reddy, M.C.(Department of Chemistry, School of Mathematical and Physical Sciences, Sri Venkateswara University, Tirupati 517 502, TN, India) **Justiciresinol, a new furanoid lignan from Justicia glauca.** *Journal of Natural Products*, v. 54(6): p. 1639-1641, 1991 (7 ref, Eng).

Justiciresinol, a new lignan isolated from *J.glauca*, has been characterized as 2-(4-hydroxy-3-methoxyphenyl)-4-(4-hydroxy-3, 5-dimethoxyphenyl) methyl-tetrahydrofuran-3-methanol, based on spectroscopic data and chemical transformations.

9203-1929 Sun, S., Watanabe, S., Saito, T.(Department of Pharmacology, Capital Institute of Medicine, Beijing, People's Republic of China) **Chalcones from methanol extract of Humulus lupulus.** *Kawasaki Medical Journal*, v. 16(2-3): p. 117-125 , 1991 (9 ref, Eng).

Methanol extracts of cones of *H.lupulus* cultivar. *Shinshu-Wase* yielded two known compounds, isoxanthohumol and xanthohumol, and two new chalcone derivatives, 3'-(isoprenyl)-2',4-dihydroxy-4',6'-dimethoxychalcone and 2',6'-dimethoxy-4,4'-dihydroxychalcone. Structures of new compounds have been elucidated by spectral methods.

9203-1930 Sun, W.J., Zhang, D.K., Sha, Z.F. , Zhang, H.L.*, Zhang, X.L.(Shaanxi Provincial Institute for Drug Control, Xian 710 061, China) **Studies on the saponins from the root bark of Aralia chinensis L..** *Acta Pharmaceutica Sinica*, v. 26(3): p. 197-202, 1991 (15 ref, Chi, Eng).

Six saponins were isolated from the root bark of *A.chinensis*. The three saponins I, II and III were identified as araloside A(I), narcissiflorine(II) and oleanolic acid 3-O-beta-D-glucopyranosyl-(1-2)-beta-D-xylopyranosyl-(1-2) -alpha-L-ara binbopyranoside(III). Saponin III was found to be a new compound and was named as araloside D.

9203-1931 Sun, X.R., Luo, H.W., Sakai, T. , Niwa, M.(Department of Phytochemistry, China Pharmaceutical University, Nanjing 210 009, China) **Paramiltioic acid, a novel rearranged norabietanoid from Salvia paramiltiorrhiza.** *Tetrahedron Letters*, v. 32(41): p. 5797-5800, 1991 (9 ref, Eng).

Paramiltioic acid ($C_{19}H_{24}O_{5}$; mp 200-201 degree C, yield 0.0006 percent) with an unusual carbon skeleton has been isolated from the roots of *S.paramiltiorrhiza* and its structure elucidated. IARI, New Delhi.

9203-1932 Sung, T.V., Peter-Katalinic, J.* , Adam, G.(Institute of Natural Products Chemistry, National Research

Centre of Vietnam, Tu Liem, Hanoi, SR Vietnam) **A bidesmosidic triterpenoid saponin from Schefflera octophylla.** *Phytochemistry*, v. 30(11): p. 3717-3720, 1991 (26 ref, Eng).

A new 3,28-bidesmosidic triterpenoid saponin was isolated from the leaves of *S.octophylla* together with a new trisaccharide and oleanonic acid. Based on spectroscopic data and chemical transformations, the structures of the new constituents were determined as 3-epi-betulinic acid 3-O-beta-D-glucopyranoside 28-O-{alpha-L-rhamnopyranosyl (1 to 4)-beta-D-glucopyranosyl(1 to 6)}-beta-D-glucopyranoside and alpha-L-rhamnopyranosyl(1 to 4)-O-beta-D-glucopyranosyl(1 to 6)-beta-D-glucopyranose.

9203-1933 Sung, T.V., Lavaud, C.*, Porzel, A. , Steglich, W., Adam, G.(Institute of Natural Products Chemistry, National Research Centre of SRV, Hanoi, Vietnam) **Triterpenoids and their glycosides from the bark of Schefflera octophylla.** *Phytochemistry*, v. 31(1): p. 227-231, 1992 (17 ref, Eng).

A new triterpene and its glycosides were isolated from the bark of *S.octophylla* together with asiatic acid and asiaticoside. Based on spectroscopic data, especially 2D NMR, and chemical transformations the structures of the new compounds were determined as 3alpha-hydroxy-urs-12-ene-23,28-dioic acid and 3alpha-hydroxy-urs-12-ene-23,28-dioic acid 28-O-{alpha-L-rhamnopyranosyl(1 to 4)-O-beta-D-glucopyranosyl(1 to 6)-beta-D-glucopyranoside. For the first time asiaticoside was isolated from a plant other thant *Centella asiatica*.

9203-1934 Sykora, M., Opletal, L., Sovova, M. , Trojanek, J. (Research Institute for Pharmacy and Biochemistry, Prague, Czechoslovakia) **Characteristics of the oil from the seeds of Coronilla varia L. and some of its components.(Abstract of Paper presented at Symposium on Prospects of Therapeutical and Economic use of the Crown Vetch(Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 100-101, 1989 (Eng).

Extraction of the seeds of *C.varia* with petroleum ether and chloroform yielded 3.1 and 5.1 percent oil. Physico-chemical constituents of the oil are reported. The oil contains about 0.15 percent tocophenyl acetate.

9203-1935 Tahara, S., Moriyama, M., Ingham, J.L., Mizutani, J. (Department of Agricultural Chemistry, Faculty of Agriculture, Hokkaido University, Kita-ku, Sapporo 060, Japan) **Structure revision of piscidone, a major isoflavonoid in the root bark of Piscidia erythrina.** *Phytochemistry*, v. 31(2): p. 679-682, 1992 (19 ref, Eng).

The structure of piscidone, one of the most complex isoflavones found in the root bark of *P.erythrina*, has been re-investigated. Although previously thought to be 5,7,4',5'-tetrahydroxy-2'-methoxy-6'-(3,3-dimethyl-allyl)isoflavone, the use of various NMR procedures (1H NMR, 13C NMR, NOE, and HMBC) indicates that piscidone is actually 5,7,3',4'-tetrahydroxy-5'-methoxy-2'-(3,3-dimethylallyl) isoflavone.

9203-1936 Takamatsu, S., Saito, K., Ohmiya, S.*, Ruangrungsi, N., Murakoshi, I.(Faculty of Pharmaceutical Sciences, Chiba University, Yayoi-cho 1-33, Chiba 260, Japan) **Lupin alkaloids from Sophora exigua.** *Phytochemistry*, v. 30(11): p. 3793-3795, 1991 (20 ref, Eng).

A new lupin alkaloid, (-)-12-cytisineacetamide, was isolated from the dry roots of S.exigua. Its structure was determined by spectroscopic methods and by direct comparison with a synthetic sample.

9203-1937 Takayama, H., Wu, F.E., Eda, H. , Oda, K., Aimi, N., Sakai, S.*(Faculty of Pharmaceutical Sciences, Chiba University, 1-33, Yayoi-cho, Chiba 260, Japan) **Five new napelline-type diterpene alkaloids from Aconitum liangshanium.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1644-1646, 1991 (6 ref, Eng).

The structures of five new C20-diterpene alkaloids having the napelline skeleton, i.e., 12-epi-lucidusculine, 12-epi-19-dehydronapelline, 12-epi-19-dehydrolucidusculine, liangshanine, and liangshanone, found from the roots of *A.liangshanium*, were determined by spectrosocpic analysis and chemical reactions.

9203-1938 Takeshita, T., Yokoyama, K., Yi, D. , Kinjo, J., Nohara, T.*(Faculty of Pharmaceutical Sciences, Kumamoto University, Oe-honmachi 5-1, Kumamoto 862, Japan) **Four new and twelve known sapogenols from Sophorae Subprostratae Radix.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1908-1910, 1991 (5 ref, Eng).

Four new oleanene sapogenols having 22-oxo group were obtained from the methanolysate of the crude glycosidic fraction in Sophorae Subprostratae Radix, the root of *Sophora subprostrata*. Also, twelve known sapogenols were isolated from the same methanolysate.

9203-1939 Talapatra, S.K., Das,A.K. , Chakrabarti, S., Polley, M., Paul, P. , Porel, A., Mandal, K., Bhaumik, A. , De, S., Mishra, K., Dan, S. , Talapatra, B.(Centre of Advanced Studies on Natural Products, Department of Chemistry, University College of Science, Calcutta 700 009, WB, India) **Chemical constituents of medicinal plants: Part**

III. *Indian Journal of Chemistry*, v. 31B(2): p. 133-135 , 1992 (31 ref, Eng).

A number of known compounds belonging to several classes such as alkaoids, different aromatic compounds, coumarins, ester, ester amide, flavonoid, phenanthrenes, steroids, sterol glycosides, and terpenoids have been isolated from sixteen medicinal plants belonging to ten botanical families. List of plants names has been tabulated.

9203-1940 Tan, R., Jia, Z.*(State Key Laboratory of Applied Organic Chemistry at Lanzhou University, Lanzhou 730000, PR, China) **Guaianolides from Artemisia xerophytica.** *Phytochemistry*, v. 31(1): p. 191-193, 1992 (8 ref, Eng).

Continuous chromatography of the extract of the aerial parts of *A.xerophytica* gave, in addition to several known compounds, three new guaianolides whose structures were elucidated by high field NMR techniques and a few chemical conversions.

9203-1941 Tanaka, T., Iinuma, M., Yuki, K. , Fujii, Y., Mizuno, M.*(Department of Pharmacognsoy, Gifu Pharmaceutical University, 6-1 Mitahora-higashi 5-chome, Gifu 502, Japan) **Two new beta-hydroxychalcones from the root bark of Pongamia pinnata.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1473-1475, 1991 (12 ref, Eng).

Two new beta-hydroxychalcones named ponganones I and II were isolated from the root bark of *P.pinnata* in Japan. The structures were characterized as 7-hydroxy-2’,5’-dimethoxy-{6",6"-dimethylpyrano(2",3":4’,3’)}chalcone for ponganone I, and 7-hydroxy-2’,5’-dimethoxy-3,4-methylenedioxy-{6",6"-dimethylpyrano(2", 3":4’,3’)}chalcone for ponganone II, respectively, by means of spectroscopic analysis.

9203-1942 Tanoguchi, M., Hosono, E., Kitaoka, M., Arimoto, M., Yamaguchi, H.*(Osaka University of Pharmaceutical Sciences, 2-10-65, Kawai, Matsubara, Osaka 580, Japan) **Studies on the constituents of the seeds of Hernandia ovigera L. IX. Identification of two dibenzylbutyrolactone-type lignans and an attempt of conversion into phenyltetralin-type lignan.** *Chemical & Pharmaceutical Bulletin*, v. 39(7): p. 1873-1876, 1991 (10 ref, Eng).

Two kinds of lignans were isolated from the seeds of *H.ovigera* in addition to the nine lignans previously reported. One was confirmed as (-)-dimethylmatairesinol (1) and the other was identified as 5’-methoxypodorhizol (2) by comparison with the authentic samples. An attempt at the cyclization of 2 afforded two compounds which were determined to be isohernandin and an isomer of 15, 2-hydroxymethyl-5,6-methylenedioxy-7-methoxy-4(3’,4’,5’-trimethoxyphen yl)-1,2,3,4-tetrahydronaphthoic acid lactone.

9203-1943 Tchouankeu, J.C., Nyasse, B., Tsamo, E., Sondengam, B.L. , Morin, C.(Department of Organic Chemistry, University of Yaounde, Box 812, Yaounde, Cameroon) **An ergostane derivative from the bark of Entandrophragma utile.** *Phytochemistry*, v. 31(2): p. 704-705, 1992 (20 ref, Eng).

A new ergostane derivative was isolated from the stem bark of *E.utile* and identified as 3beta,7alpha,20beta-trihydroxy ergosta-5,24(24’) diene on the basis of spectroscopic data.

9203-1944 Tripathi, V.K., Pandey, V.B., Udupa, K.N.*, Rucker, G. (Department of Medicinal Chemistry and Centre of Experimental Medicine and Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, UP, India) **Arjunolitin, a triterpene glycoside from Terminalia arjuna.** *Phytochemistry*, v. 31(1): p. 349-351, 1992 (7 ref, Eng).

Arjunolic acid diglycoside, named arjunolitin, has earlier been reported from *T.arjuna*. Its structure has now been established as 3-O-beta-D-glycopyranosyl 2alpha,3beta,23-tri-hydroxyolean-12-en-28-oic acid 28-O-beta-D-glucopyranoside by chemical and spectral data.

9203-1945 Verdoorn, G.H., Van Wyk, B.E.(Department of Chemistry and Biochemistry, Rand Afrikaans University, Johannesburg 2000, South Africa) **Pyrrolizidine alkaloids from seeds of Crotalaria capensis.** *Phytochemistry*, v. 31(1): p. 369-371, 1992 (13 ref, Eng).

Madurensine and a new pyrrolizidine alkaloid, trans-anacrotine, were found as the only alkaloids in seeds of *C.capensis*. Structural elucidation of the new alkaloid proved that it is the trans isomer of anacrotine.

9203-1946 Wang, Y., Hamburger, M., Gueho, J. , Hostettmann, K.* (Institute de Pharmacognosie et Phytochemie, Ecole de Pharmacie, B.E.P., Universite de Lausanne, CH-1015 Lausanne, Switzerland) **Cyclohexanecarboxylic-acid derivatives from Psiadia trinervia.** *Helvetica Chimica Acta*, v. 75(1): p. 269-275, 1992 (19 ref, Eng).

3,4-Di-O-caffeoylquinic acid, 3,5-di-O-cef-feoylquinic acid, three known 3-methoxyflavonoids, caffeic acid and a novel stereoisomer of quinic acid viz., 3,4-di-O-caffeoyl derivative of (1S,3R,4R,5R)-1,3,4, 5-tetrahydroxycyclohexanecarboxylic acid have been isolated from the MeOH extract of the leaves of *P.trinervia* by gel filtration and reversed phase chromatography.

9203-1947 Wang, Y.Q., Matsuzaki, K.* , Takahashi, K., Okuyama, T., Shibata, S.(Academy of Traditional Chinese Medicine and Materia Medica of Jilin Province, Changchun 130 021, China) **Studies on the constitutents of Scutellaria species IV. High performance liquid chromatography of glucuronylflavonoids in Scutellaria ikonnikovii Juz.** *Acta Pharmaceutica Sinica*, v. 26(5): p. 358-361, 1991 (5 ref, Eng, Chi).

A successful procedure for the simultaneous separation of glycuronyl flavonoids with 5-hydroxyl group by using a reversed phase column combined with gradient elution in the constituent studies of *S.ikonnikovii* has been investigated. The relationship between the retention time and the position of hydroxyls and glucuronyls in the chemical structure has also been studied.

9203-1948 Wang, Z.M., Cheng, P.Y., Min, Z.D.* , Zheng, Q.T., Wu, C.Y., Xu, M.J. , Gue, Y.W., Mizuno, M., Iinuma, M. , Tanaka, T.(Nanjing Institute of Materia Medica, Nanjing 210009, China) **Ent-kaurene diterpenoids, isodopharicins A, B and C in Isodon pharicus.** *Phytochemistry*, v. 30(11): p. 3699-3702, 1991 (7 ref, Eng).

Three new ent-kaurene diterpenoids, isodopharicin A, B and C, were isolated from the whole plant of *I.pharicus*. The structures of isodopharicin A and B established by spectroscopic and chemical means were formulated as 11beta-acetoxy-3alpha,13alpha-dihydroxy-ent-kaur-16-en-15-one and 3alpha,11beta-diacetoxy-13alpha-hydroxy-ent-kaur-16-en-15-one, respectively. The structure of isodopharicin C was confirmed by X-ray analysis to be 11beta-acetoxy-13alpha,19-dihydroxy-ent-kaur-16-en-15-one.

9203-1949 Weyerstahl, P.(Technische Universitat Berlin, Institut fur Organische Chemie Strasse des 17.Juni 135, D-1000 Berlin 12, Germany) **New constituents from some north-west Indian Artemisia oils: Analysis and synthesis.** *International Symposium on Newer Trends in Essent. Oils & Flavs. held at RRL, Jammu, JK, India*, Oct. 21-23, 1991 (Eng).

The essential oils from *A.laciniata* (two different locations), *A.moorcroftiana*, *A.persica* and *A.salsoloides* from the Himalayan region of India have been analyzed to isolate the compounds responsible for the typical odor of these oils. All new constituents have been fully characterised by means of spectroscopic data. Characteristic for all these oils are oxygenated davanone derivatives as artedouglasia oxides and laciniata furanones. From *A.laciniata*, compounds with very rare sesquiterpene skeletons could be isolated, preferably the alcohols silphiperfol-5-en-3-ol and presilphiperfolan-9-01. From the oil of *A.salsoloides* two novel oxygenated monoterpenes could be isolated as minor constituents, 4-oxogeranyl acetate and a spiro ketal. (Abstr. No. PL 06).

9203-1950 Winterhalter, P., Lutz, A. , Schreier, P.*(Lehrstuhl fur Lebensmittelchemie der Universitat Wurzburg Am Hubland, 8700 Wurzburg, Germany) **Isolation of a glucosidic precursor of isomeric marmelo lactones from quince fruit.** *Tetrahedron Letters*, v. 32(30): p. 3669-3670, 1991 (7 ref, Eng).

The beta-D-glycopyranoside of 2,7-dimethyl-8-hydroxy-4(E), 6(E)-octadienoic acid has been isolated from *Cydonia oblonga* fruit juice as natural precursor of the important aroma compounds, marmelo lactones, and characterized as its penta acetate. IARI, New Delhi.

9203-1951 Wolfender, J.L., Hamburger, M. , Msonthi, J.D., Hostettmann, K.*(Institut de Pharmacognosie et Phytochimie, Ecole de Pharmacie, Universite de Lausanne, BEP, CH-1015 Lausanne, Switzerland) **Xanthones from Chironia krebsii.** *Phytochemistry*, v. 30(11): p. 3625-3629, 1991 (21 ref, Eng).

From a dichloromethane extract of the aerial parts and from a methanolic root extract of *C.krebsii*, 11 1-hydroxyxanthones and six xanthone glycosides have been isolated. The glycosides 5-hydroxy-3-methoxy-1-O-primeverosylxanthone, 1-hydroxy-3-methoxy-5-O-primeverosylxanthone, 5-hydroxy-3-methoxy-1-O-beta-D-glucosylxanthone, 3,5,6,7,8-pentamethoxy-1-O-primeverosylxanthone are new natural products. Their structures were established by spectroscopic (UV, EIMS, D/CIMS, 1H and 13C NMR) and chemical methods.

9203-1952 Wollenweber, E., Valant-Vetschera, K.M.(Institut fur Botanik der Technischen Hochschule, Schnittspahnstrasse 3, D-6100 Darmstadt, Germany) **External flavonoids of Satureja montana.** *Fitoterapia*, v. 62(5): p. 462, 1991 (3 ref, Eng).

Aerial parts of *S.montana* yielded apigenin, ap-4'-methyl ether (acacetin) and a trace of ap-7-methyl ether (gengkwanin), scutellarein-6,7-dimethyl- and scut-6,7,4'-trimethyl ether (cirsimaritin and salvigenin), 5,4'-dihydroxy-6,7,8-trimethoxyflavone (xanthomicrol), 5-hydroxy-6,7,8,4'-tetramethoxyflavone (gardenin B) and a trace of 5-hydroxy-6,7,8,3',4'-pentamethoxyflavone (5-desmethoxy nobiletin). The profile of exudate flavonoids produced by *S.montana* thus differs from those found so far in other species.

9203-1953 Wu, Y.C., Liou, J.Y., Duh, C.Y. , Lee, S.S., Lu, S.T. (School of Pharmacy, Kaohsiung Medical College, Kaohsiung, Taiwan, R O C) **Litebamine, a novel**

phenanthrene alkaloid from Litsea cubeba. *Tetrahedron Letters*, v. 32(33): p. 4169-4170, 1991 (5 ref, Eng).

Litebamine, a novel phenantherene alkaloid, was isolated from the wood of *L.cubeba*. Its structure was elucidated as 3,7-dihydroxy-4,6-dimethoxy-N-methyltetrahydropyrido {4,3-a}phenanthrene on the basis of spectral analysis. IARI, New Delhi.

9203-1954 Wyllie, S.G., Leach, D.N.(Centre for Biostructural and Biomolecular Research, University of Western Sydney, Hawkesbury, Richmond, Australia 2753) **Sulfur-containing compounds in the aroma volatiles of melons (Cucumis melo).** *Journal of Agricultural and Food Chemistry*, v. 40(1): p. 253-256, 1992 (22 ref, Eng).

The incidence of six thioether esters, methyl (methylthio) acetate, ethyl (methylthio)acetate, 2-(methylthio)ethyl acetate, methyl 3-(methylthio) propanoate, ethyl 3-(methylthio)propanoate, and 3-(methylthio)propyl acetate, considered to be of importance to the aroma profiles of *C.melo* fruit, has been surveyed in a wide range of cultivars. Their presence and concentrations appear to be under genetic control since there are marked differences between cultivars. The concentrations of these compounds have been determined in a number of cultivars and some have been shown to have odor values which indicate that they contribute to the overall aroma perception of the ripe fruit.

9203-1955 Xu, J.P., Xu, R.S.*, Li, X.Y.(Shanghai Institute of Materia Medica, Academia Sinica, Shanghai, 200031, China) **Glycosides of cycloartane sapogenin from Curculigo orchioides.** *Phytochemistry*, v. 31(1): p. 233-236, 1992 (9 ref, Eng).

Several new cycloartane glycosides were isolated from rhizomes of *C.orchioides* (Xian Mao- Chinese medicine). One new triterpenoidal sapogenin named curculigenin A, which was common to all the saponins, was identified as 3beta,11alpha,16beta-trihydroxycycloartane-24-one by mass spectrometry, 2D-NMR analysis and chemical evidence. On the basis of the chemical evidence and spectral data, the structures of curculigosaponin A-F were elucidated.

9203-1956 Yahara, S., Nishiyori, T., Kohda, A., Nohara, T., Nishioka, I.(Faculty of Pharmaceutical Sciences, Kumamoto University, Oe-honmachi 5-1, Kumamoto 862, Japan) **Isolation and characterization of phenolic compounds from Magnoliae Cortex produced in China.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2024-2036, 1991 (13 ref, Eng).

A chemical examination of Magnoliae Cortex produced in China *Magnolia officinalis* has led to the isolation of eighteen new lignans and related compounds {four monoterpenyl-lignans: piperitylmagnolol, dipiperitylmagnolol, piperitylhonokiol and bornylmagnolol; seven lignans: magnaldehydes B, C, magnolignans A,B,C,D and E; three norlignans: magnatriol B, magnaldehydes D and E and four dilignans: magnolignans F,G,H and together with randainal, randaiol, sinapic aldehyde, syringaresinol, syringaresinol 4’-O-beta-D-glucopyranoside and 6’-O-methylhonokiol. Their structures were determined by the chemical and spectral methods.

9203-1957 Yamaki, M., Kashihara, M., Takagi, S.(Faculty of Pharmaceutical Sciences, Mukogawa Women’s University, Koshien Kyuban-cho, Nishinomiya, Hyogo 663, Japan) **Flavone glucosides from seeds of Astragalus complanatus (Sha Yuan Zi).** *Shoyakugaku Zasshi*, v. 45(3): p. 261-262, 1991 (6 ref, Eng).

Three compounds were isolated from the seeds of *A.complanatus*. On the basis of the physicochemical evidences their structures were identified as rhamnocitrin-3-O-glucoside, 7,3’-dihydroxy-4’-methoxyisoflavone-7-O-glucoside (calycosin-7-O-glucoside) and 7-hydroxy-4’-methoxyisoflavone-7-O-glucoside (ononin).

9203-1958 Yamashita, T., Matsumoto, T. , Yahara, S., Yoshida, N., Nohara, T.(Faculty of Pharmaceutical Sciences, Kumamoto University, Oe-honmachi 5-1, Kumamoto 862, Japan) **Structures of two new steroidal glycosides, soladulcosides A and B from Solanum dulcamara.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1626-1628, 1991 (6 ref, Eng).

The structures of two new steroidal glycosides named soladulcosides A and B, isolated from the aerial parts of *S.dulcamara* including new sapogenols, were elucidated as (22R,25R)-3beta,15alpha,23alpha-trihydroxy-5alpha-spirostan-26-one 3-O-alpha-L-rhamnopyranosyl-(1 to 2)-beta-D-glucopyranoside and (22R,25R)-3beta, 23alpha-dihydroxy-5alpha-spirostan-26-one 3-O-alpha-L-rhamnopyranosyl-(1 to 2)-{alpha-L-rhamnopyranosyl-(1 to 4)}-beta-D-glucopyranoside, respectively.

9203-1959 Yang, Z., Hon, P.M., Chui, K.Y. , Xu, Z.L., Chang, H.M., Lee, C.M.* , Cui, Y.X., Wong, H.N.C., Poon, C.D. , Fung, B.M.(Department of Biochemistry, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong) **Naturally occurring benzofuran: Isolation, structure elucidation and total synthesis of 5-(3-hydroxypropyl)-7-methoxy-2-(3’-methoxy-4’-hydroxy phenyl)-3-benzo{ b}furan carbaldehyde, a novel adenosine A1 receptor ligand isolated from Salvia miltiorrhiza Bunge (Danshen).** *Tetrahedron Letters*, v. 32(18): 2061-2064, 1991 (13 ref, Eng).

The title benzofuran has been isolated from the roots of *S.miltiorrhiza* and its structure elucidated by means of spectroscopic methods as well as total synthesis. Both the natural and synthetic compounds showed a high potency (IC50=17nm and 10nM respectively) in the bovine adenosine A1 radioligand binding. IARI, New Delhi.

9203-1960 Yoneda, K., Yamagata, E., Teruya, M.(Faculty of Pharmaceutical Sciences, Osaka University, 1-6 Yamada-oka, Suita, Osaka 565, Japan) **Studies on resources of crude drugs (VI). Comparison of the constituents of Glycyrrhiza Radix (licorice) from various countries. II.** *Shoyakugaku Zasshi*, v. 45(3): p. 220-226, 1991 (6 ref, Eng, Jap).

Glycyrrhiza uralensis and various licorice roots imported from various countries were analyzed by HPLC with reference to glycyrrhizin (1) and 10 flavonoids-apioliquiritin (2), liquiritin (3), apioisoliquiritin (4), isoliquiritin (5), ononin (6), liquiritigenin (7), glycycoumarin (8), glycyrol (9), isoglycyrol (10) and glycyrin (11). Principal Component Analysis (PCA) was performed on the basis of their 1-10 contents: licorice roots of the Soviet Union, Afghanistan, Pakistan and Xinjiang resembled each other and were generally lower in the 3 content than those from Dongbei and Xibei contained less 3 than the latter. The 3 content of some Pakistani licorice root was found to be quite low. In Dongbei and Xibei licorice roots, both 8-11 contents and 1-7 contents varied so much that there could be found no significant difference. PCA applied to the data of 1-10 and 8-11 indicated that Dongbei roots in general contained more 1,3,8 and 9 and less 11.

9203-1961 Yoshida, T., Ohwashi, W., Haba, K. , Ohbayashi, H., Ishihara, K., Okano, Y. , Shingu, T., Okuda, T.(Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okayama 700, Japan) **Tannins and related polyphenols and melastomataceous plants. II. Nobotannins B, C and E, hydrolyzable tannin dimer and trimers from Tibouchina semidecandra Cogn..** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2264-2270, 1991 (12 ref, Eng).

The structures of three new hydrolyzable tannin oligomers, nobotanins B, C and E, which were isolated from the leaves of *T.semidecandra*, have been elucidated on the basis of spectral and chemical evidence. Nobotanin B is an isomer of a co-existing dimer, nobotanin F, and nobotanins C and E are trimers possessing the nobotanin B moiety as a partial structure.

9203-1962 Yoshida, T., Ohbayashi, H. , Ishihara, K., Ohwashi, W., Haba, K. , Okano, Y., Shingu, T., Okuda, T.(Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okayama 700, Japan) **Tannins and related polyphenols of melastomataceous plants. I. Hydrolyzable tannins from Tibouchina semidecandra Cogn..** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2233-2240, 1991 (26 ref, Eng).

Four new hydrolyzable tannins, methylvescalagin and nobotanins, A, D and F, along with eleven known polyphenolics, have been isolated from the leaves of *T.semidecandra*. Based on spectral and chemical evidence, nobotanin D was characterized as 1,6-di-O-galloyl-2,3-O-(S)-hexahydroxydiphenoyl-beta-D-glucose, and the structures of nobotanins A and F were established as dimeric hydrolyzable tannins possessing a valoneoyl group as a linking unit between the monomers.

9203-1963 Yoshida, T., Chou, T., Nitta, A. , Okuda, T.(Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okayama 700, Japan) **Tannins and related polyphenols of theaceous plants. IV. Monomeric and dimeric hydrolyzable tannins having a dilactonized valoneoyl group from Schima wallichii Korth..** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2247-2251, 1991 (16 ref, Eng).

Two new hydrolyzable tannins, schimawalins A and B, have been isolated from the dried flowers of *S.wallichii* and their structures, having a dilactonized valoneoyl group in the molecule, were established based on spectral and chemical evidence. Eight known hydrolyzable tannins, including camelliin B, the main constituent of the flower, with a macrocyclic dimer structure, were also isolated. The orientation of the valoneoyl groups in camelliin B was completely determined.

9203-1964 Yoshikawa, K., Shimono, N., Arihara, S.(Faculty of Pharmaceutical Sciences, Tokoshima-Bunri University, Tokushima-shi, Tokushima, 770, Japan) **Antisweet substances, jujubasaponins I-II from Zizyphus jujuba, revised structure of ziziphin.** *Tetrahedron Letters*, v. 32(48): p. 7059-7062, 1991 (Eng).

The structures of jujubasaponins I-III, new jujubogenin glycosides, isolated from the fresh leaves of *Z.jujuba* have been determined and the structure of ziziphin known as active substance of the title plant has been revised. Two jujubasaponins-acylated saponins-showed antisweet activity. IARI, New delhi.

9203-1965 Yoshikawa, K.*, Arihara, S. , Matsuura, K., Miyase, T. (Faculty of Pharmaceutical Sciences, Tokushima-Bunri University, Tokushima-shi, Tokushima 770, Japan) **Dammarane saponins from Gymnema sylvestre.** *Phytochemistry*, v. 31(1): p. 237-241, 1992 (11 ref, Eng).

Seven new dammarane-type saponins, named gymnemasides have been isolated from the leaves of *G.sylvestre* (known as "Gur-ma" in Indian folklore), together with the previously known dammarane-type saponins, gypenoside. Their structures were characterized by spectral data and chemical transformations.

9203-1966 Yu, S.S., Xiao, Z.Y.(Institute of Materia Medica, West China University of Medical Sciences, Chengdu 610 041, China) **Study on the chemical components from the bark of Nothopanax davidii (Franch) Harms.** *Acta Pharmaceutica Sinica*, v. 26(4): p. 261-266, 1991 (5 ref, Chi, Eng).

Two new oleanane type triterpene glycosides, named yiyeliangwanoside I and yiyeliangwanoside II, were isolated from *N.davidii*. Their chemical structures were elucidated by means of chemical and spectrometric analysis. The structure of yiyeliangwanoside I ($C_{57}H_{88}O_{25}$, a white powder, mp 203 to 205 degree C) was determined as 3-O-alpha-(3',4'-O-dioic-acetyl)-L-arabinopyranosyl-3beta-hydroxyolean -12-ene-28, 29-dioic acid-28-O-{alpha-L-rhamnbopyranosyl-(1 to 6)-beta-D-glycopyranosyl-(1 to 4)-beta-D-glycopyranosyl} ester. The structure of yiyeliangwanoside II: ($C_{37}H_{56}O_{10}$, a white powder, mp 240 to 244 degree C) was determined as 3-O-alpha-(3'-O-acetyl)-L-arabinopyranosyl-3beta-hydroxyolean-12-ene-2 8, 29-dioic acid.

9203-1967 Zdero, C., Bohlmann, F., Niemeyer, H.M.(Institute for Organic Chemistry, Technical University of Berlin, D-1000 Berlin 12, Germany) **Seco-, nor-, normal and rearranged labdanes from Haplopappus parvifolius.** *Phytochemistry*, v. 30(11): p. 3683-3691, 1991 (10 ref, Eng).

The aerial parts of *H.parvifolius* afforded 30 new diterpenes including 21 labdane derivatives, four nor-diterpenes, three rearranged ones, four seco-labdanes and one with a new carbon skeleton whose structure was established by partial synthesis. All strucutures were elucidated by high field NMR spectroscopy and other spectroscopic techniques. Biogenetic relationships are discussed briefly.

9203-1968 Zdero, C., Bohlmann, F., King, R.M.*(Institute for Organic Chemistry, Technical University of Berlin, D-1000 Berlin 12, Germany) **Clerodane derivatives from Diplostephium.** *Phytochemistry*, v. 31(1): p. 213-216, 1992 (15 ref, Eng).

The aerial parts of *D.floribundum* afforded, in addition to known compounds, 10 new clerodane derivatives while *D.ericoides* gave 2beta-hydroxyhardwickiic acid and widespread compounds. The structures were elucidated by high field NMR spectroscopy. The chemotanxonomic aspects are discussed briefly.

9203-1969 Zhang, D.M., Yu, D.Q., Xie, F.Z.(Institute of Materia Medica, Chinese Academy of Medical Sciences, Beijing 100 050, China) **The structure of tripterygone.** *Acta Pharmaceutica Sinica*, v. 26(5): p. 341-344 , 1991 (8 ref, Chi, Eng).

Three triterpene compounds have been isolated from the roots of *Tripterygium wilfordii*. The structure of the new compound, 3-hydroxy-25-norfriedel-3, 1(10)-dien-2-one-30 oic acid named tripterygone(III), and the identity of others, 3beta,22beta-dihydroxy-delta12-oleanen-29-oic acid(I) and 2alpha,3alpha,24-calproperties. Compound II was isolated for the first time from the title plant.

9203-1970 Zhang, J.X., Ma, G.E., Lao, A.N. , Xu, R.S.(Shanghai Institute of Materia Academia Sinica, Shanghai 200 031, China) **Studies on chemical constitutents of Fritillaria thunbergii Miq.** *Acta Pharmaceutica Sinica* , v. 26(3): p. 231-233 , 1991 (7 ref, Chi, Eng).

A new C-nor-D-homosteroidal alkaloid was isolated from the bulbs of *F.thunbergii* with peimine and peiminine, named zhebeinine, ($C_{27}H_{45}O_3N$, mp 240 to 242 degree C). On the basis of the IR, 1H NMR, 13C-NMR and MS of zhebeinine, the structure of zhebeinine has been established as 5alpha, 14alpha-cevanine-3beta, 6 alpha, 20beta-triol.

9203-1971 Zhang, M., Stout, M.J., Kubo, I.*(Division of Entomology and Parasitology, College of Natural Resources, University of California, Berkeley, CA 94720, USA) **Isolation of ecdysteroids from Vitex strickeri using RLCC and recycling HPLC.** *Phytochemistry*, v. 31(1): p. 247-250, 1992 (19 ref, Eng).

Six phytoecdysteroids were efficiently isolated from the root bark of *V.strickeri* using a combination of rotation locular countercurrent chromatography (RLCC) and recycling high-performance liquid chromatography (R-HPLC). They were identified as 20-hydroxyecdysone, ajugasterone C, abutasterone, 11alpha-hydroxyecdysone, 20-hydroxyecdysone-20,22-monoacetonide and ajugasterone C-20,22-monoacetonide by means of spectroscopic data. This is the first report of 11alpha-hydroxyecdysone and ajugasterone C-20,22-monoacetonide isolated from a natural source.

9203-1972 Zhihui, D., Jingkai, D., Zonglian, C., Peiyu, B., Hayashi, N.*, Komae, H.*(Laboratory of Phytochemistry, Kunming Institute of Botany, Academia Sinica, Kunming, Yunnan, China) **Amides from Asarum chingchengense.** *Phytochemistry*, v, 30(11): p. 3797-3798, 1991 (9 ref, Eng).

Two new amides, chingchengenamide A and B, were isolated together with isoasatone A and beta-sitosterol from the rhizomes of *A.chingchengense*. The structures of chingchengenamides A and B were elucidated by spectral data analysis as (2E,4E)-N-isobutyl-7-(,4-methylenedioxyphenyl) hepta-2,4-dienamide and (2E,4E)-N-isobutyl-7-(3,4-methylenedioxy-5-methoxyphenyl) hepta-2,4-dienamide.

9203-1973 Zhongjian, J., Zimin, L., Changzeng, W.(Institute of Organic Chemistry, Lanzhou University, Lanzhou-730 000 People's Republic of China) **Phenylpropanoid and iridoid glycosides from Pedicularis lasiophrys.** *Phytochemistry*, v. 31(1): p. 263-266, 1992 (10 ref, Eng).

Two new compounds, pedicularioside E and F, were isolated from whole plants of *P.lasiophrys*, along with the four known compounds, verbascoside, cistanoside C, cistanoside D and 8-epiloganin. On the basis of spectral and chemical evidence, pedicularioside E and F were identified to be 1'-O-beta-D-(3-methoxy-4-hydroxy-beta-phenyl)-ethyl-6'-O-feruloyl-alph a-L-(2-acetyl)-rhamnosyl-(1 to 3')-4'-acetylglucopyranoside and shanzhisin methyl ester cellobioside, respectively.

Chemotaxonomy

9203-1974 Grosso, N.R., Zygadlo, J.A. , Abburra, R.E., Decollati, N.(National University of Cordoba, Argentina) **Fatty acids composition in the seminal oil of some Solanaceae species.** *Herba Hungarica*, v. 30(3): p. 41-46, 1991 (9 ref, Eng).

Fatty acid analysis of the seed oil of 10 samples of 19 Solanaceae species is reported. Taxonomical relationship arising from the analysis of seminal fatty acids has also been discussed.

9203-1975 Hayashi, T., Okamura, K., Kawasaki, M., Morita, N. (Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University, Toyama 930-01, Japan) **Two chemotypes of Scoparia dulcis in Paraguay.** *Phytochemistry*, v. 30(11): p. 3617-3620, 1991 (17 ref, Eng).

HPLC analysis of diterpene acids in individual plants of Paraguayan *S.dulcis* revealed the presence of two chemotypes based on the major component, i.e. scopadulcic acid B type (SDB) and scoparic acid A type (SA). SDB and SA were found to be contained mainly in leaves. The hereditary nature of these phenotypes was confirmed by analysis of the progeny of the chemotypes.

9203-1976 Hemalatha, A., Radhakrishnaiah, M.(Department of Botany, Nizam College, Osmania University, Hyderabad 500 001, AP, India) **Chemical systematics of Euphorbia S.I..** *Journal of the Swamy Botanical Club*, v. 8(3&4): p. 115-118, 1991 (12 ref, Eng).

The distribution pattern of phenolic acids in 17 species of Euphorbia indicates close chemical relationships among them. The stability of the compounds under varied edaphic conditions is reflected in the red and green ecotypes of *E.heterophylla, E.hirta* and *E.prostrata.* The chemical distinction between *E.cyathophora* and *E.heterophylla* reflected in the distribution of phenolic acids. All the species studied including those which have been relegated as chamaesyce i.e *E.elegans and E.thymifolia* could be keyed out on chemical grounds. NSL, New Delhi.

9203-1977 Sashida, Y., Ori, K., Mimaki, Y.(Tokyo College of Pharmacy, 1432-1, Horinouci, Hachioji, Tokyo 192-03, Japan) **Studies on the chemical constituents of the bulbs of Lilium mackliniae.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2362-2368, 1991 (17 ref, Eng).

Chemical study on the bulbs of *L.mackliniae* has led to the isolation of a total of 27 compounds, including nine new phenolics. The structures of the new compounds have been shown by spectral analysis and chemical degradation to be 4,4'-di-O-acetyl-3,6'-O-feruloylsucrose, 3,4'-di-O-p-coumaroylsucrose, 3,6'-di-O-p-coumaroylsucrose, 2;-O-acetyl-3,4'-di-O-p-coumaroylsucrose, 3;-O-acetyl-3,4'-di-O-p-coumaroylsucrose, (2S)-1-O-p-methoxycinnamoyl-2-O-beta-D-glucopyranosylglycerol (methylregaloside D), (2S)-1-O-cinnamoyl-2-O-beta-D-glucopyranosylglycerol (regaloside J), (2S)-1-O-caffeoyl-2-O-beta-D-glucopyranosylglycerol (regaloside K) and (2R)-1-O-beta-D-glucopyranosyl-2-O-caffeoylglycerol (regaloside L). In addition, several previously reported phenolic glycosides, steroidal saponins and steroidal alkaloids have been isolated and identified. The presence of the steroidal alkaloid supported the idea that *L.mackliniae* is taxonomically related to the genus *Fritillaria.*

9203-1978 Witte, L., Ernst, L., Adam, H. , Hartmann, T.*(Institut fur Pharmazeutische Biologie der Technischen Universitat D-3300 Braunschweig, Germany) **Chemotypes of two pyrrolizidine alkaloid-containing Senecio species.** *Phytochemistry*, v. 31(2): p. 559-565, 1992 (26 ref, Eng).

Evaluation of the pyrrolizidine alkaloids(PAs) of more than 100 populations of *S.jacobaea* and of ca 25 populations of *S.erucifolius* from different geographic locations revealed the existence of different chemotypes. Two chemotypes were established within each species. They are for *S.jacobaea*,(a)'jacobine chemotype' with jacobine and its derivatives as major PAs, representing the well known 'classical' PA pattern of this species, (b)'erucifoline chemotype', with erucifoline and O-acetylerucifoline as dominating PAs; and for *S.erucifolius*, (a)'erucifoline chemotype', erucifoline and O-acetylerucifoline as major PAs.(b)'eruciflorine chemotype', with eruciflorine compound as dominating PA. Eruciflorine was identified as a novel PA. Its structure was elucidated by means of NMR and mass spectrometry. Individual populations representing the different chemotypes within the respective species are indistinguishable from their morphological characters.

Ethnomedicine

9203-1979 Ballero, M., Fresu, I.(Istituto di Botanica ed Orto Botanico della Universita degli Studi di Cagliari, Viale Fra Ignozio, 13, Cadliari, Italy) **Plants employed in phytotherapy in Marganai region (South west Sardinia).** *Fitoterapia*, v. 62(6): p. 524-531, 1991 (8 ref, Eng, Ita).

The raditional uses of 65 medicinal plants belonging to 40 families, of the massif of the Marganai(Sardinia) and their relevant methods of administration are reported.

9203-1980 Chhabra, S.C., Mahunnah, R.L.A. , Mshiu, E.N.(Chemistry Department, Kenyatha University, P O Box 43844, Nairobi, Kenya) **Plants used in traditional medicine in Eastern Tanzania.V. Angiosperms (Passifloraceae to Sapindaceae).** *Journal of Ethnopharmacology*, v. 33(1-2): p. 143-157 , 1991 (97 ref, Eng).

Sixty one angiosperms, used by traditional healers in five regions of Eastern Tanzania are listed. For each species listed, botanical and vernacular names, collection number, locality, habit, distribution and medicinal uses are given. Information from the literature on medicinal uses, chemical constituents and pharmacological effects are also given. NML, New Delhi.

9203-1981 De Feo, V.(Dipartmento di Chimica delle Sostanze naturali, Universita degli Studi Federico II, Via D. Montesano, 49 80131 Napoli, Italy) **Plants used for antiinflammatory activity in the region Alto Ucayali, Easten Peru.** *Fitoterapia*, v. 62(6): p. 481-494, 1991 (11 ref, Ita, Eng).

Plants traditionally used as antiinflammatory remedies in folk medicine, which is a very important part of the health care in Peru, in some areas of Alto Ucayali Region near to the town of Pucallpa in Peruvian Selva, were surveyed. Ethnobotanical data on 99 species belonging to 53 families of angiosperms and 1 of Pteridophytes are reported. For each species the botanical name, common name, formulation, administration and medicinal uses are given.

9203-1982 Ghoshal, S.C.(Anthropological Survey of India, Calcutta 700 016, WB, India) **Indigenous health practices: An appraisal of Kolha tribal society of Orissa.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 55-61, 1991 (10 ref, Eng).

Emphasis is given on the traditional health practices of the Kolha tribe of Orissa to know the cultural aspect of their health practice and associated preventive and curative medicines. Throughout the discourse the terms disease and medicine have been employed as perceived by the Kolha. To them disease means illness which is vulnerable to misfortune. The Kolha word joributi (medicine prepared from herbs, shrubs or trees) usually bears the same meaning as that of modern medicine and Kolha prefer to use their own medicines.

9203-1983 Imtiaz-ul-Haq(Department of Botany, University of Peshawar, Peshawar, Pakistan) **Ethnomedical importance and distribution of Pakistani Ephedras.** *Hamdard Medicus*, v. 34(4): p. 81-87, 1991 (10 ref, Eng).

Historical aspects, chemical constituents, therapeutic properties of ephedrine, variation in alkaloid contents, due to different species and seasonal variations, botanical identification of *Ephedra* spp. found in Pakistan have been reported.

9203-1984 Lewis, W.H., Kennelly, E.J., Bass, G.N., Wedner, H.J., Elvin-Lewis, M.P., Fast, D.W.(Department of Biology, Washington University, St.Louis, M063130, USA) **Ritualistic use of the holly Ilex guayusa by Amazonian Jivaro Indians.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 25-30 , 1991 (22 ref, Eng).

Leaf decoctions of *I.guayusa* with high caffeine concentrations are used as a morning stimulant in Amazonian Peru and Ecuador. After daily ingestion, ritualistic vomiting, reduces excessive caffeine intake, that blood levels of caffeine and biotransformed dimethylxanthines do not cause undisirable CNS and other effects. NML, New Delhi.

9203-1985 Mahyar, U.W., Burley, J.S. , Gyllenhaal, C., Soejarto, D.D.*(PCRPS, College of Pharmacy, University of Illinois at Chicago, 833S. Wortt St., Chicago, IL 60612, USA) **Medicinal plants of Seberida (Riau province, Sumatra-Indonesia).** *Journal of Ethnopharmacology*, v. 31: p. 217-237, 1991 (45 ref, Eng).

A large number of plant species (at least 100) are used in therapy in villages of Seberida. Many of the uses are magical in nature. 56 plants in which cause-effect relationship may be established have been described in the paper.

A high proportion of plants are used to treat malaria and fevers and mostly leaves are used for medicinal purposes. NML, New Delhi.

9203-1986 Messer, E.(World Hunger Program, Brown University, Providence, RI, USA) **Systematic and medicinal reasoning in Mitla folk botany.** *Journal of Ethnopharmacology*, v. 33(1-2): p. 107-128 , 1991 (30 ref, Eng).

The cognitive, symbolic, systematic botanical andbiochemical bases of plant classification and their interrelationships in the medicinal folk botany of Mitla, Oaxaca, Mexico has been discussed. Chemical constituents and their potential pharmacological values, of herbs grouped to treat the individual categories of illness, compared with local understanding has been presented. NML, New Delhi.

9203-1987 Moerman, D.E.(Department of Behavioral Sciences, University of Michigan-Dearborn, Dearborn, MI, USA) **Medicinal flora of native North America: an analysis.** *Journal of Ethnopharmacology*, v. 31: p. 1-42, 1991 (63 ref, Eng).

The data shows that medicinal species utilized by Native North Americans are distributed in a highly non-random fashion across subclasses and families as well as across groups defined in terms of growth habit and life pattern. Plants are listed familywise as well as under therapeutic categories. NML, New Delhi.

9203-1988 Panthong, A., Kanjanapothi, D. , Taesotikul, T., Taylor, W.C.(Department of Pharmacology, Faculty of Medicine, Chiang Mai University, Chiang Mai 50002, Thailand) **Ethnobotanical review of medicinal plants from Thai traditional books, Part II: Plants with antidiarrheal, laxative and carminative properties.** *Journal of Ethnopharmacology*, v. 31: p. 121-156, 1991 (40 ref, Eng).

Three hundred and twenty six plants with antidiarrheal, laxative and/or carminative properties are described. Plant part used, methods of preparation and administration and literature reference to Thai books are provided for each plant. Indications of usage in other Southeast Asian countries and phytochemical work on the plants have also been provided. NML, New Delhi.

9203-1989 Ramachandran, V.S., Manian, S.(Department of Botany, Kongunadu Arts and Science College, Coimbatore 641 029, TN, India) **Ethnobotanical notes on the Irulas, the Koravas and the Puliyas of Coimbatore district, Tamil Nadu.** *Indian Botanical Reporter*, v. 8(2): p. 85-91, 1989 ((Recd. 1991; 5 ref), Eng).

Sixty three plant species with their botanical names, local names and uses are enumerated. NSL, New Delhi.

9203-1990 Sah, S., Sarin, R.S.(Pharmaceutical Research Laboratory, Cooparative Department, Ranikhet 263 645, UP, India) **Some medicinal plants of Madmaheswer region of Garhwal Himalaya.** *Journal of Research and Education in Indian Medicine*, v. 10(2): p. 51-54, 1991 (8 ref, Eng).

Kumaun and Garhwal region of Himalaya are blessed with matchless wealth of medicinal plants due to its varied climatic and edaphic conditions right from tropical to alpine. The paper deals with medicinal plants of Madmaheswer region of district Chamoli of Uttar Pradesh based on survey. The medicinal plants recorded by visual identification are enumerated. Their botanical name and family, distribution, availability parts used and uses are also mentioned.

9203-1991 Sar, S.(Department of History of Pharmacy, Faculty of Pharmacy, Ankara University, Tandogan, Ankara 06104, Turkey) **Some folk remedies used in Central Anatolia region of Turkey.** *Hamdard Medicus*, v. 34(3): p. 40-45, 1991 (31 ref, Eng).

Nine hundred and twenty six folk medicines derived from 167 drugs (80.84 percent from plants) are enlisted. The folk medicines for dermatologic (21.27 percent), digestive (13.82 percent) and analgesic (11.44 percent) purposes are widely used in comparison to others.

9203-1992 Sharma, P.K.(Ethnobotany Unit, Regional Research Laboratory, Canal Road, Jammu 180 001, J&K, India) **Herbal remedies for treating rheumatic pains in Jammu and Kashmir.** *Indian Journal of Forestry*, v. 14(3): p. 206-210 , 1991 (19 ref, Eng).

External application and oral administration of *Aesculus indica, Cichorium intybus, Dioscorea pentaphylla, D.melanophyma, Filago arvensis, Scrophularia koelzii, Inula racemosa, Berberis aristata* and *Senecio jacquemontianus* by different ethnic groups of Jammu and Kashmir state for rheumatic pains have been enlisted.

9203-1993 Sinha, R.K.*, Nathawat, G.S.(Indira Gandhi Centre, University of Rajasthan, Jaipur 302004, Rajasthan, India) **Medicinal plants and plant products used in the treatment of some respiratory disorders by the street herbal vendors.** *Journal of Scientific Research in Plants & Medicine*, v. 10(1-4): p. 1-5, 1989 (Recd. 1991, 3 ref, Eng).

The Herbal Venders are the mobile tribal medicinemen seen on the busy streets of Delhi, selling crude medicinal plants and their poducts kept in glass jars on the roadsides. They give herbal treatment for several human diseases and ailments. They also claim to have indigenous herbal drugs for the cure of some respiratory diseases such as bronchitis, asthma and even whooping cough in children. Some of those plants and their products used by them in the treatment of respiratory disorders were recorded and are described.

9203-1994 Srivastava, T.N., Kapahi, B.K.(Regional Research Laboratory CSIR, Jammu Tawi 180 001, JK, India) **Resource survey of plants of potential economic value of Sikkim Himalayas.** *Bulletin of Medico-Ethnobotanical Research*, v. 12(1-2): p. 1-11, 1991 (9 ref, Eng, Hin).

Sikkim Himalayas were exploited intensively. About 400 species of wild cultivated medicinal and aromatic plants were found. Out of them, 120 species are available in considerable quantities and have good potential as raw material for essential oils, steroids, alkaloids, tannins, pharmaceutical industry and exports have been listed. The details covering botanical and local names wherever possible, parts used, approximate quantity availbale and improtant constituents have also been given.

9203-1995 Vedavathy, S., Rao, K.N.(Department of botany, S V University, Tirupati 517 502, AP, India) **Nephroprotectors-folk medicine of Rayalaseema-Andhra Pradesh.** *Ancient Science of Life*, v. 9(3): p. 164-167, 1990 (6 ref, Eng).

The medicinal plants which are used by the village folk of Rayalaseema area for curing kidney ailments are reported. They aredivided into two categories a) Plant drugs which control urination and b) The plant drugs which dissolve the stones of the urinary bladder. Latin, sanskrit, verncular names of plants, family name, part used, mode of administration and dose are also mentioned.

Analytical & Processing Techniques

9203-1996 Bandyopadhyay, C.(Food Technology & Enzyme Engineering Division, Bhabha Atomic Research Centre, Bombay 400 085, India) **Recent trends in flavour evaluation of spices.** *International Symposium on Newer Trends in Essen. Oils & Flavs., RRL, Jammu, J&K, India. p.16*, Oct 21-23, 1991 (Eng).

Various methods for the isolation and concentration of volatile flavour compounds of spices are described and a comparative data with respect to yield and composition of typical mango, ginger, *Curcuma amada* essential oil is presented. Low temperature-high vacuum distillation technique appears to be primary choice for the isolation of spice essential oils. Increasing importance of supercritical carbon dioxide extraction in the isolation of spice flavourings is highlighted. Recent advances in gas chromatographic separation of spice essential oils and the identification of aroma components by other instrumental methods are described. (Abstr NO. SL-O6).

9203-1997 Buiarelli, F., Cartoni, G.P. , Coccioli, F., Ravazzi, E. (Dipartimento di Chimica, Universita di Roma, La Sapienza, Ple Aldo Moro 5, 00185 Rome, Italy) **Analysis of orange and mandarin essential oils by HPLC.** *Chromatographia*, v. 31(9/10): p. 489-492, 1991 (16 ref, Eng).

The analysis of orange and mandarin essential oils (non-volatile fraction) was carried out by HPLC in normal and reverse phase modes with UV and spectrofluorimetric detection in series. For the identification of chromatographic peaks, a preparative HPLC was used, the purified fractions were analysed by GC-MS and by LC-MS. Some flavones were found in these oils. IARI, New Delhi.

9203-1998 Cooper, T.H., Guzinski, J.A. , Fisher, C.(Kalsec, Inc., PO Box 511, Kalamazoo, Michigan, USA) **Improved HPLC method for the determination of major capsaicinoids in capsicum oleoresins.** *Journal of Agricultural and Food Chemistry*, v. 39(10): p. 2253-2256, 1991 (21 ref, Eng).

The major capsaicinoids responsible for pungency in capsicum oleoresins were separated and quantified in an oleoresin and pharmaceutical model system using HPLC. The major capsaicinoids measured include capsaicin, dihydrocapsaicin, and nor dihydrocapsaicin. The minor capsaicinoids and the synthetic analogue of capsaicin, N-vanillyl-n-novamide are tabulated. PID, New Delhi.

9203-1999 Dagnino, D., Schripsema, J. , Peltenburg, A., Verpoorte, R., Teunis, K.(Biotechnology Delft Leiden, Project Group Plant Cell Biotechnology, Division of Pharmacognosy, Center for Biopharmaceutical Sciences, Leiden University, P O Box 9502, 2300 RA Leiden, The Netherlands) **Capillary gas chromatographic analysis of indole alkaloids: Investigation of the indole alkaloids present in Tabernaemontana divaricata cell suspension culture.** *Journal of Natural Products*, v. 54(6): p. 1558-1563 , 1991 (22 ref, Eng).

A capillary gas chromatographic analysis is described by which non-derivatized indole alkaloids and indole-related compounds can be separated and identified when the system is coupled to a mass spectrometer. By the use of this analysis some phenolics and sterols could also be separated. The phenolics coniferyl alcohol and sinapyl alcohol and the sterols campesterol and stigmasterol were identified in *T.divaricata* cell suspension cultures.

9203-2000 Gopalakrishnan, N., Narayanan, C.S.(Regional Research Laboratory, CSIR, Trivandrum 695 019, Kerala, India) **Supercritical carbon dioxide extraction of cardamom.** *Journal of Agricultural and Food Chemistry*, v. 39(11): p. 1976-1978, 1991 (11 ref, Eng).

Cardamom *Eletteria cardamomum* seeds were extracted with supercritical carbon dioxide at different conditions of pressure, temperature, contact time, and moisture content to estimate the yield and compositional variations. The yield of cardamom extract was found to be fairly constant at different conditions of extraction, but the nonvolatiles and chlorophyll contents varied in the extract with extraction parameters. The proportion of minor and major components also showed variations under different conditions of extraction.

9203-2001 Hanneguelle, S., Thibault, J.N. , Naulet, N., Martin, G.J.(Laboratoire de RMN et Reactivite-Chimique, URA-CNRS-472, 2 Rue de la Houssiniere, F44072 Nantes, Cedex, France) **Authentication of essential oils containing linalool and linalyl acetate by isotopic methods.** *Journal of Agricultural and Food Chemistry*, v. 40(1): p. 81-87, 1992 (29 ref, Eng).

Site specific natural isotope fractionation studied by NMR combined with molecular isotope ratio determination by mass spectrometry (IRMS) was used to characterise linalool and linalyl acetate obtained from essential oils viz., lavender (*Lavandula angustifolia*) and spike lavender (*Lavandula latifolia*). Pure samples of linalool or linalyl acetate extracted from bois derose oil (*Aniba rosaeodora*), bergamot (*Citrus bergamia*), germanium (*Pelargonium graveolens*), clery sage oil (*Salvia sclarea*), petit grain oil (*Citrus aurantium*), coriander (*Coriandrum sativum*) and Formosan camphor oil shiu oil (*Cinnamomum camphora*) were obtained.

9203-2002 Heimler, D., Pieroni, A.(Dipartimento dei Scienza del Suoloe Nutrizione della Pianta, Piazzale delle Cascine 28, 50144, Firenze, Italy) **High-performance quantitative thin-layer chromatography of flavonoid glycosides and biflavonoids of Cupressus sempervirens in relation to Cypress canker.** *Chromatographia*, v. 31(5/6):p. 247-250, 1991 (11 ref, Eng).

Flavonoid glycosides and biflavonoids of cypress leaves were separated by means of HPTLC with quantitation by densitometry. Different clones resistant and susceptible to cypress canker, were analysed; some differences between these two classes of trees were found in their biflavonoid content. IARI, New Delhi.

9203-2003 Iida, J., Ono, M., Inoue, K. , Fujita, T.(Analytical Applications Department, Shimadzu Corporation, Nishinoky0-kuwabara-cho, Nakagyo-ku, Kyoto 604, Japan) **Thermospray liquid chromatoraphic/mass spectrometric analysis of iridoid glycosides from Gardenia jasminolides.** *Chemical & Pharmaceutical Bulletin*, v. 39(8): p. 2057-2062, 1991 (29 ref, Eng).

Thermospray liquid chromatography/mass spectrometry (TSP LC/MS) was applied to the determination of iridoid glycosides. Monosaccharide glycosides exhibited dependence, in terms of sensitivity and mass spectra, on the ion source block temperature. Disaccharide glycosides exhibited dependence in sensitivity and peak shape on the block temperature. The resulting mass spectra gave qualitative information concerning both the aglycon and sugar moieties as well as molecular weights. A methanol extract from the fruit of *G.jasminoides* was analyzed for iridoid glycosides which were identified by mass spectra and mass chromatograms.

9203-2004 Ikeda, Y., Ishida, N., Fukaya, C. , Yokoyama, K., Tabata, M., Fukui, H. , Honda, G.(Research Division, The Green Cross Corp., 2-1180-1 Shodaiohtani, Hirakata, Osaka 573, Japan) **Determination of the ratio between optical isomers, shikonin and alkannin by high performance liquid chromatography analysis.** *Chemical & Pharmaceutical Bulletin*, v. 39(9): p. 2351-2352, 1991 (4 ref, Eng).

The optical isomers, shikonin(occurring in *Lithospermum erythrorhizon* and alkannin (in *Alkanna tinctoria*, can be separated by chiral phase high performance liquid chromatography. The results of analysis have shown that the commercial standards of "shikonin" or "alkannin" as well as the red pigments extracted from the roots of some Boraginaceous plants contain both optical isomers in various proportions.

9203-2005 Iwagami, S., Sawabe, Y., Nakagawa, T.(Osaka Prefectural Institute of Public Health, 1-3-69, Nakamichi, Higashinari-ku, Osaka 537, Japan) **Micellar electrokinetic chromatography for the analysis of crude drugs (1). Determination of glycyrrhizin in oriental pharmaceutical preparations.** *Shoyakugaku Zasshi*, v. 45(3): p. 232-239, 1991 (11 ref, Eng).

High-performance capillary electrophoresis (HPCE) using a micellar solution of ionic surfactant, called micellar electrokinetic chromatography (MEKC), was applied to the analysis of glycyrrhizin in Glycyrrhizae Radix and commercial oriental pharmaceutical preparations containing Glycyrrhizae Radix. A laboratory-made instrument was used. A sample was introduced into the tube by siphoning. The on-column detection was performed at 254 nm by using n-propyl p-hydroxybenzoate as an internal standard. Both of the calibration line obtained from the peak height ratios and that from the peak area ratios gave a good linearity over the concentration range, 50-1,000 microg/ml.

9203-2006 Krause, M., Galensa, R.(Institut fur Lebensmittelchemie der Technischen Universitat Braunschweig, Schleinitzstrase 20,3300 Braunschweig, FRG) **Analysis of enantiomeric flavanones in plant extracts by high-performance liquid chromatography on a cellulose triacetate based chiral stationary phase.** *Chromatographia*, v. 32(1/2): p. 69-72, 1991 (13 ref, Eng).

Flavanones of *Arachis hypogaea, Hemizonia increscens, Eriodictyon glutinosum* and *Thymus vulgaris* extracts were stereospecifically analysed by gradient elution on a column of cellulose triacetate supported on silica gel diol. The stereochemistry of naringenin, eriodictyol and homoeriodictyol was found to be in favour of the 2S-configurated flavanones. IARI, New Delhi.

9203-2007 Liu, W.Z., Peng, W.B., Yang, C.H.(Hubei Provincial Institute for Drug Control, Wuhan 430 064, China) **Berberine-electrochemical detector for the determination of berberine-type alkaloids in various chinese patent medicines by flow injection analysis.** *Acta Pharmaceutica Sinica*, v. 26(4): p. 315-319, 1991 (7 ref, Chi, Eng).

An accurate, convenient and rapid method is proposed for the determination of berberine-type alkaloids in various Chinese patent medicines (*Coptis chinensis, Phellodendron chinensis*. Xianglian Wan, Zuojin Wan, Ermiao Wan and Sanmiao Wan). The slope is 54 to 60 mV/decade over theconcentration range of 10-3 to 3 x 10-6 mol/L berberine at pH 2 to 9.5. Direct potentiometry determination of berberine in various samples showed an average recovery of 99.5 to 103.5 percent and a relative standard deviation of 1.3 to 3.5 percent at a sampling rate of 120/h).

9203-2008 Maheshwari, R.C., Ashok Kumar , Gupta, A.K.(Centre for Rural Development and Technology, Indian Institute of Technology, Haus Khas, New Delhi 110016, India) **Supercritical fluid extraction and separation of essential oils from botanicals.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.81*, Oct 21-23, 1991 (Eng).

Essential oils from Ajowan seeds (*Carum copticum*), *Costus* roots and *Saussurea lappa* were extracted with liquid and superitical fluid carbondioxide (a new separation technique of botanicals). Extraction was carried out at different pressures and temperatures and yield percent of the extracts was calculated. The quality and yield of essential oil was compared with that obtained by steam distillation method and found to be of better quality and higher yield. The yield at 10degee C was found maximum. Extraction of Ajowan at higher temperature resulted in the formation of oleoresin. Effect of particle size on extraction condition was also studied. The samples were analysed by TLC and gas chromatography. (Abstr. No. CT-O4).

9203-2009 Matysik, G., Benesz, M.(Department of Inorganic and Analytical Chemistry, Medical Academy, Staszica 6, 20081 Lubin, Poland) **Thin-layer chromatography and densitometry of anthocyanins in the petals of red poppy during development of the flowers.** *Chromatographia*, v. 32(1/2): p. 19-22, 1991 (22 ref, Eng).

The variation in anthocyanins content of the petals of *Papaver rhoeas* during development of flowers from the closed bud stage have been reported. IARI, New Delhi.

9203-2010 Max, Y.X., Zheng, Z. , Mao, J.(Department of Applied Chemistry, Beijing Institute of Chemical Technology, Beijing 100029, China) **Analytical supercritical fluid extraction of Chinese herbal medicines.** *Chromatographia*, v. 32(1/2): p. 40-44, 1991 (15 ref, Eng).

An analytical supercritical fluid extraction technique followed by GC/MS, developed to separate and determine the volatile components in Chinese herbal medicine has been described. Three kinds of herbs, frankincense, myrrh and *Evodia rutaecarpa* were extracted and analysed. IARI, New Delhi.

9203-2011 Mino, Y.(Osaka University of Pharmaceutical Sciences, 2-10-65, Kawai, Matsubara, Osaka 580, Japan) **Metal-containing components in medicinal plants.II. Convenient identification of some Datura species by peptide mapping of their ferredoxins.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1585-1587, 1991 (5 ref, Eng).

A new method for plant identification is proposed in which each ferredoxin(Fd) is isolated from small amounts of fresh leaves of five species of *Datura* viz., *D.metel, D.innoxia, D.arborea, D.stramonium* var.*stramonium* and *D.stramonium* var.*tatula* and the tryptic digest of each S-carboxymethlated Fd is subsequently compared by peptide mapping using reversed-phase. This method makes it possible to analyze five samples in 4 or 5d. The results obtained for the five plants indicate the HPLC patterns which reflect amino acid sequences of Fd to possibly be correlated to their morphological similarity.

9203-2012 Muzik, M., Solich, P.(Department of Pharmaceutical Technology, Faculty of Pharmacy, Charles University, Hradec Kralove, Czechoslovakia) **Technological possibilities of the formulation of hyrcanoside into the dosage form. (Abstract of paper prsented at Symposium on Prospects of Therapeutical and Economic use**

of Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralova). *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 109-110, 1989 (2 ref, Eng).

A method of formulation of intensively bitter hyrcanoside into tablets by direct compression has been described. The prescription includes 5 percent hyrcanoside, 25 percent Avial PH 101,69.3 percent lactose,0.5 percent calciumn stearate and 0.2 percent Aerosil. The mean mass variability as well as the uniformity of content were satisfactory.

9203-2013 Nie, L.H., Zhang, X.T., Yao, S.Z.(New Material Research Institute, Chemical Engineering Department, Human University, Changsha 410 082, China) **Use of extraction-frequencymetric method for the determination of microquantities of ephedrine and its application in pharmaceutical analysis.** *Acta Pharmaceutica Sinica*, v. 26(4): p. 311-314, 1991 (4 ref, Chi, Eng).

A new extraction-frequencymetric method has been proposed for the determination of ephedrine. The method is based on extraction of the free alkaloid followed by measuring the frequency shift of a specially constructed ring-coated piezoelectric crystal at room temperature. The frequency shift is in linear relationship with the content of ephedrine hydrochloride over a range 0.05 to 1.2 micro g with correlation coefficient of 0.999 and a detection limit of 0.02 micro g. Methods for the assay of ephedrine hydrochloride tablet and nasal solution have been proposed.

9203-2014 Opletal, L., Sovova, M., Budesinsky, M.(Department of Pharmaceutical Botany and Ecology, Faculty of Pharmacy, Charles University, Hradec kralove, Czechoslovakia) **Isolation of the most important metabolites of coronilla varia L. potentially usable as pharmaceuticals. (Abstract of paper presented at symposium on prospects of therapeutical and economic use of the crown vetch (Coronilla varia) on June 22, 1989 at Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 99-100, 1989 (4 ref, Eng).

Isolation of important metabolites from seeds (daphnoretin, scopoletin, umbelliferone, hyrcanoside, deglucohyrcanoside and (-)-epicatechin) and roots (3-nitropropionic acid and its glycoside, corollin, karakin, coronillin, coronarinan and cibarian and its 6-monoester) of *C.varia* has been described.

9203-2015 Sharma, G.K., Arya, S.K.(Defence Food Research Laboratory, Mysore 570 011, India) **Microencapsulation of cumin oleoresin.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.78*, Oct 21-23, 1991 (Eng).

Microencapsulation of spice oleoresins by spray drying process has been tried to improve the stability of flavour in dehydrated convenience foods. Suitability of various gums (Arabic, Rosin, Tragacanth) as wall materials and emulsifiers (Tween-20, Tween-80 ard sodium caseinate) for preparation of stable emulsion for spray drying has been evaluated. Among these gum arabic has been found to retain maximumm volatile material and Tween-80 gave most stable emulsion. The retention of volatiles increased with gum arabic solids in the emulsion and maximum retention (79 percent) was at 35 percent gum solids. An inlet temperature of 150degree C and outlet temperature of 90degree C was found to be most optimum for maximum retention of volatiles. The proportion of major volatiles namely, cymene, cumenealdehyde and pinene did not change significantly during encapsulation. Stability of microencapsulated cumene oleoresin was estimated by storing at 0.0, 0.32 and 0.73 water activity in desiccators. Upto one month storage, there was no change in volatile content and surface oil. There was no caking and proportion of major volatile compounds also did not change on storage. (Abstr. No. CT-01).

9203-2016 Tanimori, H., Akahori, A., Sonoi, S., Kitagawa, T.* (Faculty of Pharmaceutical Sciences, Nagasaki University, Bunky0-machi 1-14, Nagasaki 852, Japan) **A new enzyme immunoassay for a solid Chinese crude drug, Pinellia tuber.** *Chemical & Pharmaceutical Bulletin*, v. 39(6): p. 1476-1479, 1991 (8 ref, Eng).

An antiserum specific for Pinellia tuber was elicited in two rabbits. Using the antiserum and powdered Pinellia tuber-coated microtiter plate as the immunological reagents, and beta-D-galactosidase-labeled goat anti-rabbit immunoglobulin G (IgG) as the tracer, a new enzyme immunosassay for a solid Pinellia tuber with a working range between 0.1 and 1000 micro g/ml was developed. The assay was specific for a solid Pinellia tuber and showed low cross-reaction values on other Chinese crude drugs and the extract of Pinellia tuber. The specificity of the assay was compared with the selected antibody enzyme immunoassay for the extract of Pinellia tuber. Both methods utilized the same immunological reagents, and the only difference between them was the solid-phase antigen used.

9203-2017 Theagarajan, K.S., Prabhu, V.V. , Ravi Kumar, G. (Institute of Wood Science and Technology, Bangalore, Karnataka, India) **Distillation of Eucalyptus hybrid oil using portable distillation unit in the field.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.80*, Oct 21-23, 1991 (Eng).

A portable distillation unit working on fuelwood was designed and fabricated for field distillation of eucalyptus hybrid foliage. Under optimum conditions 1-1.8 percent (average 1.43 percent) of oil was distilled with this unit, which is higher than that obtained with stationary stills of larger dimensions. More than 95 percent of oil could be distilled out in the first two hours of distillation of which the first hour collection (about 75 percent) was found to contain more of cineole than the second hour collection. This unit could be used with advantage for distilling oils from other plant materials. (Abstr. No. CT-O3).

9203-2018 Vokac, K.(Institute of Organic Chemistry and Biochemistry, Czechoslovak Academy of Sciences, Prague, Czechoslovakia) **Possible determination of some important metabolites of the crown vetch (Coronilla varia L.) with the use of HPLC. (Abstract of paper presented at Symposium on Prospects of Therapeutical and Economic use of Crown Vetch (Coronilla varia L.) in Czechoslovakia, June 22, 1989, Hradec Kralove).** *Folia Pharmaceutica Universitatis Carolinae*, v. 15: p. 108, 1989 (Eng).

A method involving HPLC and UV detection at 218nm has been described for the quantitative analysis of umbelliferone, scopoletin, daphnoretin, hyrcanoside and deglucohyrcanoside in the extracts from various parts of the plant. With a mean error of (+-)2.5 percent it is possible to reliably determine as much as 0.01 percent of the examined metabolites in the plant extract.

Miscellaneous

9203-2019 . Butcher's broom- a monograph. *Lawrence Review of Natural Products*, p. 1-2 , September 1991 (9 ref, Eng).

Butcher's boom (*Ruscus aculeatus*), has been used in traditional medicine and for culinary applications for centuries. Botany, history, chemistry, pharmacology and toxicology of the plant being used in the management of circulatory disorders have been briefly reviewed. There is little data to indicate that the extracts of *R.aculeatus* are effective for the management of circulatory disorders. Plant is not toxic. It should not be confused with broom (*Cytisus scoparius*) or Spanish broom (*Spartium junceum*).

9203-2020 . Citronella oil-a monograph. *Lawrence Review of Natural Products*, p. 1, Oct. 1991 (4 ref, Eng).

Citronella oil derived from *Cymbopogon nardus* and *C.winterianus* is commonly used as an insect repellent and has also found use in foods, cosmetics and toiletries. History, chemistry, pharmacology and toxicology of citronella oil have been reviewed briefly.

9203-2021 . Rose hips-a monograph. *Lawrence Review of Natural Products*, p. 1-2, Sep. 1991 (7 ref, Eng).

Rose hips are a pleasant-tasting source of natural vitamin C. Rose hips are derived from *Rosa canina, R.rugosa, R.acicularis, R.cinnamomea* and many other rose species. History, chemistry, pharmacology and toxicology of rose hips have been reviewed briefly.

9203-2022 . Valerian-a monograph. *Lawrence Review of Natural Products*, p. 1-2, Oct. 1991 (19 ref, Eng).

Valerian is a popular plant used as a sedative/hypnotic, especially in parts of Europe. Scientific names (*Valeriana officinalis, V.wallichii, V.alliariifolia* and *V.sambucifolia*, common names, botany, history, chemistry, pharmacology and toxicology of valerian have been discussed briefly.

9203-2023 . Fumitory- a monograph. *Lawrence Review of Natural Products*, p. 1-2, December 1991 (8 ref, Eng).

Fumaria officinalis has a long history of use in traditional medicine and has been investigated for its therapeutic potential in the management of cardiovascular and hepatobiliary disorders. The plant has not been associated with significant toxicity . Botany, history, chemistry, pharmacology and toxicology of fumitory have been briefly reviewed.

9203-2024 . Althea- a monograph. *Lawrence Review of Natural Products*, p. 1, December 1991 (7 ref, Eng).

Althaea officinalis root and extracts have demulcent properties that make them useful in the management of sore throats and coughs alongwith topical dermal irritations. The plant has a long history of use and is not associated with any significant toxicity. Botany, history, chemistry, pharmacology and toxicology of *A.officinalis* have been briefly reviewed.

9203-2025 Ahmed, J., Farooqui, A.H.(Department of Botany, Faculty of Science, Jamia Hamdard, New Delhi 110062, India) **Some controversial drugs from Avicenna's Cannon of Medicine- an appraisal.** *Hamdard Medicus*, v. 34(3): p. 81-87, 1991 (2 ref, Eng).

Some common controversial drugs of Avicenna's Cannon of Medicine, with a view to familiarising for further verification and advance research work have been discussed.

9203-2026 Akhtar Hussain(CIMAP, Lucknow 226016, UP, India) **Present and future of agrotechnology of essential oil plants in India.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p. 9-10*, Oct 21-23, 1991 (Eng).

Main emphasis of research and development in the field of essential oils in India should be to improve the agrotechnologies of indigenous plants especially lemongrass, vetiver and palmarosa in order to increase India's export to international market. Efforts should also be made to develop the essential oils of geranium, patchouli, lavender, rose, clary sage, rosemary, bergamot mint and ylang-ylang. (Abstr. No. SL-02).

9203-2027 Born, C.(Schmidstrasse 12,7961 Bergeitreute, Germany) **Walnuts- medicinal plant of the month.** *PTA Heute*, v. 5(10): p. 509-510, 1991 (Ger).

Description, chemical constituents, pharmacological activity, preparations and dose of the drug, *Juglans* spp, have been briefly described.

9203-2028 El-Gammal, S.Y.(PO Box 136, Maadi, Cairo, Egypt) **Extraction of volatile oils throughout history.** *Hamdard Medicus*, nv. 34(4): p. 57-80, 1991 (Eng).

History of preservation and storage of volatile oils and modern extraction methods have been discussed with illustrations.

9203-2029 Gaedcke, F.(H. Finzelberg's Nachfolger GmbH & Co. KG, Koblenzer Strasse 48-54 5470 Andernach, Germany) **(Phytopharmaca-Definition illustration and significant concepts and, quality of preparations).** *Deutsche Apotherker Zeitung*, v. 131(48): p. 2551-2555 , 1991 (2 ref, Ger).

The subject has been reviewed by taking *Panax ginseng, Betula* spp., *Curcuma* rhizomes, *Hypericum* herb, Rheiradix, *Crataegus* leaves and flowers, kavakava rhizomes, and *Convallaria* herb as examples.

9203-2030 Hamacher, H.(Dischingerweg 15,7400 Tubingen 15, Germany) **Has phytotherapy any future ?.** *Deutsche Apotheker Zeitung*, v. 131(42): p. 2155-2162 , 1991 (5 ref, Ger).

Only title translated.

9203-2031 Hudge, V.S.*, Mahurkar, D.S. , Salunke, M.R.(Department of Plant Physiology, College of Agriculture, MAU Parbhani 431482, Maharashtra, India) **Preliminary survey of medicinal and aromatic plants in Kinwat area in Marathawada region.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.57*, Oct 21-23, 1991 (Eng).

Kinwat is the forest area of Marathawada region. Survey of medicinal and aromatic plants of the region has brought over 100 species many of which have recognizable medicinal value. A comprehensive list of available medicinal and aromatic plants has been prepared. Further work on exploitation of the flora has been suggested. (Abstr. No. B-11).

9203-2032 Jain, S.(Gupta and Company Ltd., XIV/294 Gali Mandi Pan, Sadar Bazar, Delhi 110006, India) **Future trends in flavour and fragrance industry in India.** *International Symposium on Newer Trends in Essen. Oils & Flavs., RRL, Jammu, J&K, India. p. 11*, Oct 21-23, 1991 (Eng).

The fragrance and the flavour industry in the country today is going through a period of crisis due to increase in prices compounded by shortage of vital raw materials. The future trend perforce will be in direction of recasting of conventional formulations of both fragrances and flavours. Some directions in which development work may prove fruitful were discussed. (Abstr. No. SL-O3).

9203-2033 John, K.(Spices Board, P B No.1909, St. Vincent Cross Road, Kochi 682 018, Kerala, India) **The gallery of spices and herbs-II.** *Indian Spices*, v. 27(3): p. 25-34, 1990 ((Recd. 1991), Eng).

Origin and distribution , description of the plant, flavour characteristics, usage profiles, Indian production and export of *Apium graveolens, Anthriscus cerefolium, Capscicum spp., Allium schoenoprasum, Cinnamomum tamala, Syzygium aromaticum, Coriandrum sativum, Cuminum cyminum* and *Murraya koenigii* are listed.

9203-2034 Kohli, Y.P.(J N College, Pasighat, Arunchal Pradesh, India) **New plant sources of essential oils in Arunachal Pradesh.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.36*, Oct 21-23, 1991 (Eng).

Some of the economically useful plants from which essential oils of industrial and medicinal importance may be extracted have been described. The chemical composition and utility of essential oils obtained from some plants/grasses is discussed. The local names of plants and their habitats are also discussed. (Abstr. No. C-13).

9203-2035 Koul, O., Isman, M.B., Ketkar, C.M.(Department of Plant Science, University of British Columbia, Vancouver, BC Canada V6T 2A2) **Properties and uses of neem, Azadirachta indica.** *Canadian Journal of Botany*, v. 68(1): p. 1-11, 1990 (164 ref, Eng).

A number of important biological properties of chemicals, extracts and preparations from parts of neem have been highlighted. Some of the properties are of sufficient importance to suggest potential for commercialization of products based on neem derivatives particularly as pharmaceuticals, pesticides, fertilizers and animal feed. The following areas of investigation are recommended: agronomy, processing of neem seed, standardization of neem oil, in vitro and in vivo studies on efficacy of neem against viral, fungal bacterial pathogens, toxicological study and as antifertility agents.

9203-2036 Mahdihassan, S., Saeed, A.(SD 34, Block A, North Nazimabad, Karachi, Pakistan) **Bent stalks of soma plant.** *Hamdard Medicus*, v. 34(3): p. 28-32, 1991 (5 ref, Eng).

Bent in stalks of *Ephedra* spp. along with their reeded and jointed nature have been discussed with illustrations.

9203-2037 Malmsten, T., Paakkonen, K. , Hyvonen, L.(Department of Food Chemistry & Technology, University of Helsinki, SF-00710, Helsinki, Finland) **Packaging and storage effects on microbiological quality of dried herbs.** *Journal of Food Science*, v. 56(3): p. 873-875, 1991 (14 ref, Eng).

Two hundred herb samples were investigated for microbiological were determined for dill, basil, marjoram, and wild marjoram. Total aerobic count ranged from 104 to 107/g dried material. Molds and aerobic sporeformers, especially Bacillus cereus, were detected in most samples; fecal indicator organisms were found infrequently. The number of most vegetative microbes was affected by the drying method. Microbes survived air-drying better than freeze-drying. Packaging affected microbial content. The lethal effect of storage time was most clearly shown when the herbs were packed in oxygen-containing packages.

9203-2038 Protzen, K.D.(Paul Kaders, GmbH, Hamburg, Germany) **Regulations within the EEC regarding handling, transport and packaging of essential oils.** *Indian Perfumer*, v. 35(3): p. 125-134, 1991 (Eng).

A detailed account of the regulations regarding handling, use and transportation of essential oils specially the dangerous substances and dangerous goods, is presented. Emphasis has been given on the safety aspects of the essential oils.

9203-2039 Rai, M.K.(Microbiology Research Laboratory, Danielson College, Chhindwara 480 001, MP, India) **The therapy of dermatophyte infections: A review.** *Indian Medicine*, v. 4(1): p. 5-8, 1992 (80 ref, Eng).

Review presents treatment of dermatophytic infections with synthetic drugs, and herbal medicines alongwith their future prospects. NSL, New Delhi.

9203-2040 Rebelo, M.L., Pita, J.R.. **Study on the stability of dermatological preparations of clindamicin gel with carbopol and ceratonia siliqua gum.** *Boletin da Faculdade de Farmacia de Coimbra*, v. 14(2): p. 19-29, 1990 (6 ref, Por, Eng).

Stability of three preparations of clindamycin gel with carbopol 940, carbopol 934 and locust bean (*C.siliqua*) gum have been investigated. The rheological behaviour of these preparations have been studied after having them submitted to accelerated ageing through heat.

9203-2041 Sarin, Y.K., Dhar, K.L., Thappa, R.K., Agarwal, S.G., Kapahi, B.K.(Regional Research Laboratory, Jammu-Tawi 180001, J&K, India) **Aromatic flora of Himalayan region-prospects of commercial utilization.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.21-22*, Oct 21-23, 1991 (Eng).

The essential oil and aroma chemical industry the world over, is dependent on forest products and other naturally occurring raw materials. A study conducted by International Trade Centre (UNCTAD), Geneva) has identified about fortyfive major essential oils. Out of these twentyone are obtained from forests. The aromatic flora of Himalayas consist of around three hundred species of Angiosperms and Gymnosperms. The commercial utilization, however, restricts only to about fifteen plants. Wild aromatic plants are important in providing new and novel aromatic compounds which may have great value in compounding various perfumes and flavours, and also for the betterment of local populace. (Abstr. No. SL-11).

9203-2042 Shankaracharya, N.B., Raghavan, B. , Abraham, K.O., Shankaranarayana, M.L.(Central Food Technological Research Institute, Mysore 570 013, Karnataka, India) **Large cardamom-chemistry, technology and uses.** *Indian Spices*, v. 27(3): p. 12-20, 1990 ((Recd.1991; 26 ref), Eng).

Cultivation, harvesting methods, varieties, curing methods, grading and standards, physical and chemical compostion, export and uses of large cardamom *Amomum subulatum* have been reported.

9203-2043 Siddique, M.A.A., Jhon, A.Q., Paul, T.M., Tanki, M.I. (Division of Floriculture, Medicinal and Aromatic Plants, SK University of Agricultural Sciences and Technology, Shalimar 191121, J & K, India) **Essential oil bearing medicinal plants: A Kashmir Himalayan perspective.** *International Symposium on Newer Trends in Essen.Oils & Flavs, RRL Jammu, J&K, India. p.73*, Oct 21-23, 1991 (Eng).

Kashmir Himalayas represent a rich repository of highly variable germplasm. Many species bear essential oils and are traditionally employed in various systems of medicine. Many of these species like: *Artemisia maritima, Cedrus deodara, Juniperus communis, Mentha sp., Rheum emodi, Saussurea lappa, Thymus serpyllum* etc. have an export potential. An assessment of the occurrence and availability, curative effects and the mode of administration of such "crude drugs" has been made. The non-judicious exploitation of many such species has led to the extirpation of the populations in nature and thus they call for an immediate attention on the part of the conservationist. The active participation of the organic chemist and the pharmacologist for authenticating the medicinal claims of such plants is emphasized. (Abstr. No. B-24).

9203-2044 Singh, H.G.(University Campus, PO Gurukul Kangri, Hardwar, Up, India) **Himalayan herbs and drugs, importannce and extinction threat.** *Journal of Scientific Research in Plants & Medicines*, v. 10(1-4): p. 47-52, 1989 (Recd. 1991, 5 ref, Eng).

The quality of the some plants produced in Himalayan region is far better than that produced in other parts of the world. It is true of Harad (*Terminalia chebula*), Baheda (*T.belerica*), Amla (*Emblica officinalis*), Tagar (*Valeriana wallichi*), Brahmi (*Centella asiatica*) etc. That is why so many Ayurvedic Pharmacies are localised inHimalayan region and the demand for the raw material is increasing day by day the world over. Because of over use, medicinal plants and drugs are facing extinction threat. In vitw of this the botanist, enviromentalists and government have shown concern and certain preventive measures have been taken to avert the extinction of Himalayan plants herbs and drugs.

9203-2045 Singh, R.H., Singh, K.P.(Department of Kayachikitsa, Institute of Medical Sciences, Banaras Hindu University, Varanasi 221 005, UP, India) **Perspectives in plant drug research.** *Ancient Science of Life*, v. 9(3): p. 154-158, 1990 (16 ref, Eng).

Ayurveda that leads in plant medicine preserves the natural form of herbs maximum, in various pharmaceutical preparations. Isolation of active principles has not proved much fruitful. However, the need of the hour is cultivation of more medicinal plants along with popularization of their use in traditional simpler forms.

9203-2046 Sticher, O., Hasler, A., Meier, B.(Departement Pharmazie, ETH Zurich, Clausiusstrasse 25, CH-8092, Zurich, Switzerland) **Ginkgo biloba- Present position.** *Deutsche Apotheker Zeitung*, v. 131(36): p. 1827-1835 , 1991 (38 ref, Ger).

Only title translated.

9203-2047 Sukh Deo. **Ayurvedic & modern drug development. Modern investigations on Ayurvedic drugs (concluding part).** *Deerghayu International*, v. 4(4): p. 2-14, 1988 ((Recd. 1992); 135 ref, Eng).

Significance and harnessing of Ayurveda for drug development has been discussed taking *Asparagus racemosus*(Shatavari) and *Commiphora mukul* as examples. A plan for Ayurveda based modern drug discovery has been presented. Twenty Ayurvedic crude drugs with pharmacologically/therapeutically proven claims are also listed.

9203-2048 Trennheuser, F., Grammes, C., Adam, K.P.(Fachbereich 12 der Universitat des Saarlandes Pharmakognosie und Analytische Phytochemie, Fachrichtung 12.3,6600 Saarbrucken, Germany) **Phytotheraphy-Herbal practitioners and modern drug development.** *Deutsche Apotheker Zeitung*, v. 131(43): p. 2260-2265 , 1991 (Ger).

Report of third Congress of Society for Phytotherapy held at Lubeck-Travemunde from 3 to 6 October 1991 is presented.

9203-2049 Zafar, R., Neerja(Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Jamia Hamdard, Hamdard Nagar, New Delhi 110062, India) **Momordica charantia- a review.** *Hamdard Medicus*, v. 34(3): p. 49-61, 1991 (51 ref, Eng).

Phytochemistry, protenous compounds, pharmacology and uses of *Momordica.charantia* and allied species are reported.

New Publications

9203-2050 Brossi, A.(Academic Press, Inc. San-Diego, CA, USA , 1991)(National Institute of Health, USA) **The alkaloids, chemistry, pharmacology, 1991, xi+364 pp., 95$.** *Journal of the American Chemical Society*, v. 113(23): p. 9009, 1991 (Eng).

Betalains chemistry and its distributions in plants, isolation, chemical degradations and spectroscopic analysis of the compound has been dealt with in the first chapter. In the second chapter, a biogenic benzodiazepine alkaloids and its biological activity as tranquilising agents has been described. It appears, that, only asperlicin and its analogues has been shown to possess pharmacological activities. In the subsequent chapters, phenanthrene alkaloids, vegetable drug, khat and cathedulin alkaloids has been dealt with. Reviews of biological and biochemical investigations of plants of five families using histochemical and other techniques has been given. Taxus alkaloids and its isolation from yew tree and the potential of taxol in the treatment of solid tumors and adult leukemia has been highlighted in this book. The last chapter has been devoted for ellipticine alkaloids.

Patents

9203-2051 Hidenobu, Y.(Noevir Company Limited, Japan) **Synergistic anti-dandruff hair preparations containing**

benzoic acid and hinokitiol and/or oil of Melaleuca alternifolia. Japan Kokai Tokkyo Koho JP 01,117,820 (Cl. A61 K7/06), 1987, 3PP. (Jap, Eng).

Oil of *M.alternifolia* in presence benzoic acid and hinokitiol showed a synergistic activity against antidandruff effect. A hair tonic preparations containing ethanol, l-menthol, hinokitiol and oil of *M.alternifolia* showed a better antidandruff effect in men than a control subjects not containing either hinokitiol and the oil.

9203-2052 Hiromichi, I.(Daiichi Kigenso Kagaku Kogyo Inc., Japan\) **Manufacture of hydroxylapatite and tricalcium phosphate from rice bran. Japan Kokai Tokkyo Koho JP 01,93,468 (Cl.C01 B25/32), 1989, 4PP.** (Jap, Eng).

Hydroxylapatite and Ca3(P04)2 which are useful in the manufacture of dental materials and prosthetics are obtained from rice bran (*Oryza sativa*).The treatment consists of extraction of rice bran with hexane, defatted bran was refluxed with 300 ml 0.01 N Hcl solution. The extract was subjected to cationic exchange chromatography. Phytic acid solution was treated with CaCo3 and Ca(OH)2 to obtain a ppt. which was washed and dried for one hour. The ppt. was treated with NH4cl and the product was washed and further dried to give hydroxylapatite. Similarly, Ca3(PO4)2 can be prepared.

9203-2053 Liankui, Z., Zhibin, Y.(Zichuan Vegetable Coloring matter Mill) **Extraction of curcumine from Rhizoma curcumas longae. Faming Zhuanli Shenqing Gongkai Shoumingshu CN 87,101,355 (Cl. C09 B61/00), 1988, 10PP.** (Chi, Eng).

A method has been described for the extraction of curcumine from Rhizoma curcumae longae. It comprises of four step process involving extraction of volatile oil with steam followed by ethanolic treatment. The product is further extracted with petroleum ether solvent. The final product was subjected to purification by making use of acid-alkali saponification method. By this method, 100 kg of R.curcumae longae (20 mesh powder) has yielded 5 kg of curcumine.

9203-2054 Nobuyoshi, A.. **Preparation of crude papain with green papaya fruit or its peel. Japan Kokai Tokkyo Koho JP 01,13,995 (Cl.C12 N9/50) 1989, 2PP.** (Jap, Eng).

The whole green papaya fruit or its peel is cut and dried by heating. Crude papain mixture thus obtained was further pulverized. The fine product is used in pharmaceutical industry and used as meat tenderizer and as pesticide's too.

9203-2055 Pierre, A.. **Syrups containing sedative, a homeopathy base and a medicinal plant tincture for treatment of sleep disorders in adults and children. Fr. Demande FR. 2,614,532 (Cl.A61 K35/78), 1988, 5PP.** (Fre, Eng).

A pharmaceutical syrup contains a mixture of series of phenobarbital, tartrate, atroprine sulphate, scopolamine-HBr, a homeopathic compositions and a mixture of suitable exicipients (upto 200 ml). A suitable homeopathic compositions contained *Avena sativa, Coffea cruda, Telluricus, sumbulus, Ignatia borax* and H3PO4 in alcoholic solution. A second composition contained *Tilia tomentosa, Cicuta virosa*, Mg, K phosphate {Chamomilla spp, *Valeriana* and Lachesis along with exicipients such as bitter orange peel syrup and alcohol is added to obtain a suitable syrupy liquid. Syrup can be safely administered to children at night to induce sleep.

9203-2056 Shoji, F., Fumiko, K., Masami, S.(Takeda Chemical Industries Limited, Japan) **Bornane derivatives and Pharmaceuticals containing them. Japan Kokai Tokkyo Koho JP 63,290,892 (Cl.C07.H15/203), 1988, 10PP.** (Jap, Eng).

Borananol glucosides are obtained from ginger, (R=H, acyl or alkyl in the given structural formula) *Amomum xanthioides*. The glucosides are very effective as sedatives. The product is obtained from crude ginger by extraction with water and purified by a series of column chromatography. The glucoside has been termed as amomumoside (100 mg of the compound is obtained by 1 kg crude ginger) has the structure as 1R,2S,4R,5R-1,7,7-trimethyl-bicyclo{2.2.1}heptane-2,5-diol-2beta-D-glucopyranoside.

9203-2057 Tailiang, W.. **Preparation of cigarets containing compounds for disease control. Faming Zhunali Shenqing Gongkai Shoumingshu CN 87,101,921 (Cl. A24.B15/18) 1988, 6PP.** (Chi, Eng).

Cigarets for controlling certain disease can be prepared from cut tobacco leaves mixed with camphor, menthol, peppermint oil, *Aucklandia lappa* oil, musk along with other materials.

9203-2058 Takeo, M., Atsushi, I.(Nisshin Oil Mills, Limited, Japan) **Isolation of glycosides from sesame seeds. Japan Kokai Tokkyo Koho JP 63,165,396 (Cl.C07 H17/04) 1988, 5PP.** (Jap, Eng).

Extraction of defatted sesame seed with aqueous methano followed by chromatography on silica gel column yielded a glycosides (R=glycosyl or galactosyl in the given structural formula) and n=integers/1. The glycosides isolated has exhibted antitumor, antioxidant and antimutagenic activities.

9203-2059 Tatsuo, N.(Kameya Minami Chain K K) **Manufacture of water soluble powder containing fragrant plant essential oils. Japan Kokai Tokkyo Koho JP 01,22,814 (Cl. A61 K7/26), 1989, 2PP.** (Jap, Eng).

Plant essential oils are mixed with water and proteins (or denatured proteins) and the solution obtained was dried to get the product in a powder form. Essential oils from cedar leaves, pine leaves etc are added to water containing proteins. The product obtained is a water soluble material containing copious quantity of oil with an appealing fragrance.

9203-2060 Tsuyoshi, Y., Isao, S., Eriko, M. , Soyao, M.(Showa Denko K K, Japan) **Purification of glycyrrhizin from licorice by counter-current chromatography. Japan Kokai Tokkyo Koho JP 01,190,695 (Cl. C07 H15/256) 1989, 3PP.** (Jap, Eng).

Glycyrrhizin is useful in pharmaceutical industry. The purification of the compound has been achieved by means of countercurrent chromatography using methacrylic acid ester polymers placed in the chromatography Column. 99 percent purification is achieved by chromatography of licorice extract (1 ml) over a DE-2013 column (Grannule size 8-12 micron) using MeVn-0.75 percent aq. HoAc as the eluent at 5 ml/min. and 20 kg/cm2.

9203-2061 Zhenyu, J.. **Volatile oil from Angelica sinensis roots for therapeutic use. Faming Zhuanli Shenqing Gongkai Shoumingshu, CN 87,101,266 (Cl. A61 K35/78), 1988, 2PP.** (Chi, Eng).

Oil from *Angelica sinensis* roots were prepared by soaking the roots in distilled water for nearly 20 hrs. and then steamed. The gas phase is collected and condensed and cooled. The product is the root oil filled in Vials and then sterlized for 40 min. at 100degree C. Oil is found to contain certain physiologically active constituents such as Vitamin B12, Vitamin B1, and Vitamin E. It is best suited for the treatment of congenital cerebral dysgenesis.

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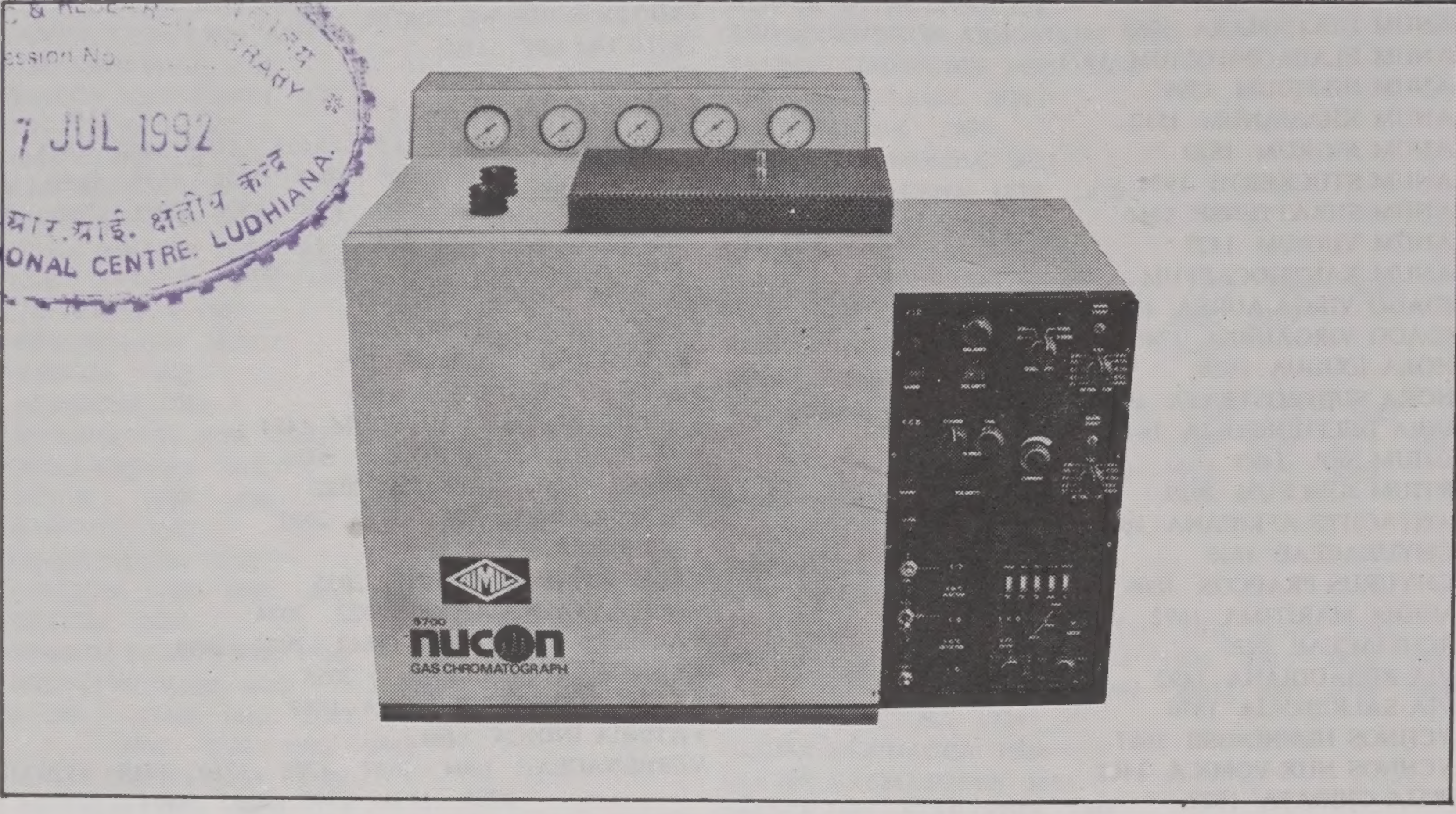

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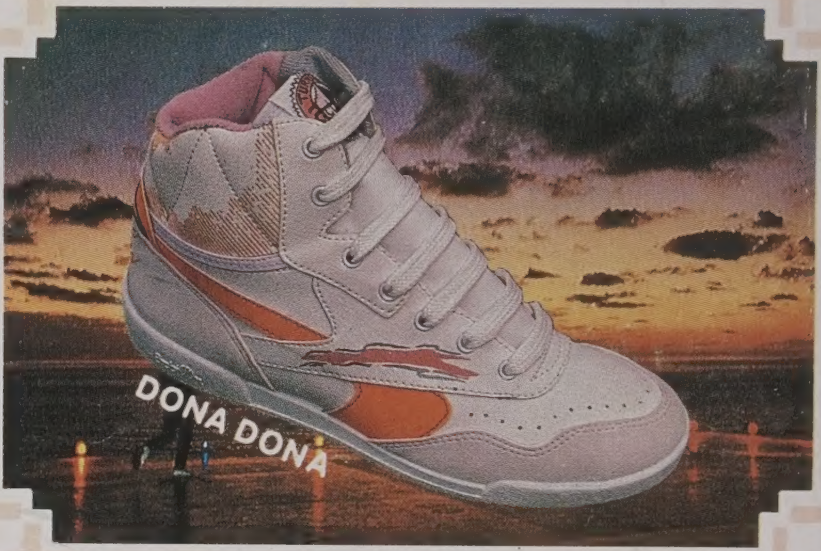

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